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# SIERRA CLUB BULLETIN

VOLUME  
TEN



NUMBER  
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SAN FRANCISCO  
JANUARY  
1918

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# SIERRA CLUB BULLETIN

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JANUARY, 1918

VOL. X

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*Freemason*

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SIERRA CLUB BULLETIN, VOL. X.

PLATE CLXXXVI.



ROBSON AND TUMBLING GLACIER  
Photo by Marion R. Parsons

*Sierra Club, 3-4-22, 1*



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## A WEEK AROUND MOUNT ROBSON

BY MARION RANDALL PARSONS



"WHAT is your final destination?" asked the immigration officer. For a wanderer with such indefinite plans the question seemed simpler to answer according to catechism than to geography.

"May I say heaven?" I asked.

"No," said he, not relaxing his official solemnity, "not unless you have a ticket there."

So I gave Jasper Park as the farthest east of my summer destinations.

Jasper Park and Forest Reserve, and the smaller Mount Robson Park on its western margin, lie along the borders of British Columbia and Alberta on the line of the Grand Trunk Pacific Railway. Tributaries of the Fraser, the Athabasca and the Peace rivers rise among the great snowfields that make these two great parks of the northern Rockies a shining glory for mountaineers. The region is also rich in the romance of the great fur trading companies. Jasper House and Henry

Sierra Club, 3-4-22, 18

House; Jasper Hawes and the "yellowhead" halfbreed whose name is perpetuated in Yellowhead Pass and the Tête Jaune Cache—these are names familiar to all lovers of the early history of the Northwest.

My companion, Miss Lulie Nettleton, and I had only a day at Jasper, the administrative center and principal settlement. There we played the unwonted part of tourists, conveyed about in carriages. From the Tent City on Lake Beauvert we drove to Pyramid Lake and the curiously sculptured and potholed Maligne Cañon. The roads had a novel interest, as they had been built by interned Austrians and Germans the first year of the war. These national parks were created so shortly before war-crippled times that only by such haphazard means has their development been possible.

Lack of roads, however, is no deterrent to mountaineers, but rather the contrary. We had hoped to take a horseback journey to Mount Cavell and over the Athabasca Trail to Maligne Lake, but all our available time was given to the Robson country, where tent cities there are none and trails are almost as negligible. There, in war time at least, is only Donald Phillips, guide, trapper, hunter, cook and king of the whole mountain wilderness.

Donald looked distinctly amused that afternoon, when we descended from the train, demanding in the first breath that he take us up Mount Robson. Donald was one of the Robson pioneers, and since he and Mr. George Kinney made their climb in 1909, only three other men—Captain McCarthy, Mr. F. W. Foster, and their guide, Conrad Kain—have succeeded in reaching the summit. Donald's ascent had been made before the building of the railroad, and they had traveled with a pack-train all the way from Edmonton. In addition to hardships that included three defeats by storms and "ninety-six hours spent above ten thousand feet altitude," they had suffered from a shortage of food. "We ate squirrels till we could taste the stripes," was Donald's vivid way of describing it. Small wonder that his eyes twinkled as he advised us to wait till the clouds lifted and we got a good look at Robson before we decided to climb.

After spending a night at Donald's camp on the Fraser we

started out on the trail—riding, rather against our will. But there were swift, strong rivers to be forded and we had no choice. Robson was still cloud-hung, and its great front, streaked with horizontal strata of brown and yellow, and gullied with snow and ice, towered above us, black and menacing, to unguessed heights. Our trail led up the Grand Fork Cañon, through flats of contorta pines, and up among woods of hemlocks and Douglas firs, moss-carpeted like the coast forests.

True alpine scenery began at Kinney Lake, a smooth sheet of robin's-egg blue walled by the shining slope of Whitehorn. The lake lies at the lower end of the Valley of a Thousand Falls. One after another the cascades came into view—slanting obliquely over ledges; dropping in dainty veils of mist, wind-tossed to nothing before they reached the ground; slow-rocketing down from great heights; booming deep in rocky chasms; and above them all the mighty Emperor Falls, pouring down in full sunlight. High above, too, hung the Whitehorn Glacier, with sharp-toothed seracs cutting blue and white gashes in the sky.

Then up into fields of asters and paintbrush we climbed, and through alluring patches of wild strawberries and raspberries, to a valley whose whole floor was filled by the river bed. For half a mile we splashed from one gravel bar to another through torrents of muddy glacier water. It is a curious, and at first rather a terrifying, experience to ride into a river up to the horse's girths. The current swept past with such speed that the laboring horse ahead seemed to be standing still, and only by the heaving sensation could I realize that my own horse was moving.

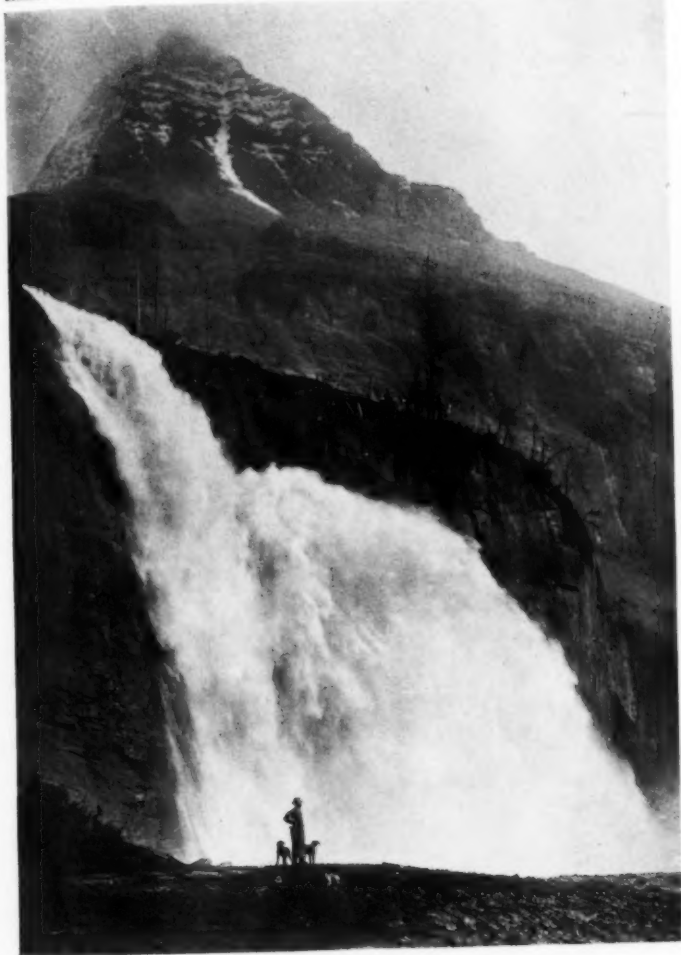
Above this river-trail came a gravelly waste. Fan-shaped deposits from glacial side-streams pushed the river close under Mount Robson. We had rounded the mountain and were now on its northern side. Instead of a wall of rock, as on the southern and western faces, the mountain here was a seamed and shattered wall of ice. The Tumbling Glacier, lost in clouds above, broke off in a sharp white cliff into Berg Lake. A fleet of fairy ice-ships was drifting in it, and as we rode along its shore a crashing avalanche set a host of new bergs afloat.

Just beyond Berg Lake lay our camp at Robson Pass, the site of the Canadian Alpine Club camp of 1913. We started afoot with Donald next morning over the Robson Glacier to Snowbird Pass. It was a day of easy climbing, up the glacier for three or four miles and then along grassy slopes and rocky ledges. The mountain tops were still hidden, though now and again the clouds would sweep apart and disclose the icy crown of Whitehorn, the saurian head of "Mugger," the sharp tooth of the Lynx, or white Resplendent, the snowiest and most radiant of them all.

From Snowbird Pass we climbed to the summit of Ptarmigan Peak whence we overlooked the Coleman Glacier and the deep blue rift of the Smoky River Valley. A timely break in the clouds showed us an avalanche on Robson, tons of powdered ice pouring down for a thousand feet like the mist of a waterfall. The Robson Glacier, whose whole length we could see, is the fountain of rivers flowing into two oceans. Its terminal is split by a rocky point. The northern half of the ice stream drains into Lake Adolphus, whence it flows to the Smoky River and ultimately to the Peace; the southern half is the source of a branch of the Fraser.

Not until morning did we see the whole of Robson. Donald called us at sunrise, and we looked from our tent to see it shining in golden glory in a cloudless sky. We were close under it, hardly more than a mile from its base; it rose abrupt, nearly eight thousand feet above us. From a snow cornice at the summit the Tumbling Glacier swept down the whole flank of the mountain, each ice pinnacle alight and glittering. The right hand slope was a long rock ridge, broken by ledges and precipices; that on the left swung around in an icy ridge toward black Rearguard. Even more cruel and formidable did the mountain appear in its sharp-cut brilliance than as we had heretofore seen it in fleeting glimpses through the clouds.

By this time we were ready to admit that Robson was no mountain for women to climb—not for two women with only one man at any rate. So that afternoon we decided to move camp about ten miles northeastward to Moose Pass. From this camp we made the ascent of Mount Pam, about ten thousand feet, a snow peak of little difficulty or danger except



EMPEROR FALLS AND SLOPE OF ROBSON  
Courtesy of the Grand Trunk Pacific Railway

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PLATE CLXXXVIII.

NORTH SIDE OF MOUNT ROBSON  
Courtesy of the Grand Trunk Pacific Railway

from hidden crevasses, which with so small a party are always something of a menace. We roped together, however, and had no misadventure.

Mount Pam stands out beyond the main axis of the wildest, snowiest mountain chain that I have ever seen. All around us shone literally hundreds of white summits, of which not one in fifty had ever been climbed or named. Far away to the northwest, almost like a cloud on the horizon, Donald pointed out the great peak "Kitchie," visited by Miss Mary Jobe several seasons ago, but as yet unclimbed. Close beneath us were high, bare plateau regions, the range of caribou herds; blue lakes and dusky valleys showed farther to the east. The whole horizon was rimmed with shining mountains, Robson towering above them all, visible now from its snow cornice to the blue depths of Lake Adolphus at its base.

Our return late that afternoon over glaciers and down long heather slopes gave a new and still more glorious impression of the wild sea of mountains. The peaks burned with the sunset; the velvety slopes of Moose Pass grew purple and shadowy in the dusk. Our camp was in a flowery park among groves of spiry balsams. Purple asters and yellow compositae, blue gentians and shaggy anemone heads—"little owls" Donald called them—made bright garden patches among the trees. We held campfire that night in a tepee, sitting around the tiny blaze on blankets. Many a story Donald told us of trapping days in winter, or of Hudson's Bay Company men, grown old in the wilderness before the railroad came. As we talked and our fire burned low, a strange, unearthly glow shone upon our faces.

"Northern lights!" said Donald, and we crept outside.

Flickering bands of greenish light were moving across the sky like figures in a ghostly dance. Suddenly great shafts of light shot upward toward the zenith. All around the horizon, though fainter toward the south, they shone, a tepee of the Great Manitou set in the starry meadows of the sky.

Here at Moose Pass we were on the outskirts of one of the finest big game regions of the north. We had seen the tracks of moose and caribou and grizzly bears, but except for two goats on Mount Pam, no living animal larger than a porcupine.



As we rode down the pass on our way to the Smoky River, however, Donald pointed out a caribou far down in the valley of Calumet Creek.

"Ride on steadily without speaking," he said. "We may be able to get quite close."

We were perhaps within an eighth of a mile when the caribou first saw us. Instead of running, he wheeled about once and stood looking at us as we rode forward. We had approached within a hundred yards before he showed any signs of fear. Then he merely circled and came back to look again. We got near enough to photograph him several times before he decided we were dangerous and swung away into the woods. He was a magnificent fellow, with glossy dark coat and great spreading antlers. In response to our surprise at his coolness Donald told us that he had killed one out of a herd the year before and the rest had stood around to watch him skin it.

That was my day to ride behind the caravan. Donald led always, as the way was often obscure. One lady was privileged to ride behind him, free from care, while the other kept the pack animals in motion. One of them, the Kid, reminded me of an elderly lady I once knew, who under a very meek exterior hid an iron determination to go her own way. Left to his own devices, however, the Kid would never quite drop out of sight, so I learned to let him follow at his own pace, and behind old Roanie rode on unfretted, enjoying the new snow peaks rising in every notch of the valley and the picturesque maneuvers of our train. We followed an old Indian trail, scarcely a trail at all, that forded the river about forty times that day.

As fresh tributaries were added the fords became more and more disturbing. At lunch time Donald shook his head.

"The river's mighty high," said he. "It's been rising for two days. We may have to swim the horses below."

"Can my horse swim and carry me too?" I demanded in some trepidation.

"Oh, he can a little way," said Donald. "But if the current's too swift you'd better hop off."

"Hop off!" said I.

"Yes—just hang on to the pommel and he'll pull you

through." Luckily this feat was not required of me. We made the last crossing, that of Glacier Creek, without mishap, though it ran turbulently over a rough and bouldery bottom. At dusk we pitched camp in a fir-fringed meadow close under Mount Bess. The special charm of this camp was its close proximity to grizzly bears. We plucked their hair off trees for souvenirs, and found their tracks wherever we stepped, even saw drops of water shaken from their coats not yet dry on the streamside rocks, but not a bear did we see.

From the upper slopes of Bess Pass, where we climbed in the morning, we saw new ranges and valleys of desire. A high green upland and a chain of white peaks that terminated in an icy Olympian mountain aroused our keenest interest.

"Some day," we said to Donald, "we are coming back, with Sierrans and Mountaineers and three weeks' time and provisions instead of one. Save us that beautiful mountain for a first ascent."

"Sure I will," promised Donald. "I'll set all my bear traps around it in the fall."

Then we struck camp and started the caravan along the homeward trail. Kinnikinic\* and dwarf cornel berries flashed red under the trees, and though the best flower season was past, harebells and paintbrush and asters still bloomed in the open spaces. We left the long shingle bars of the Smoky Valley near sunset and rode up through the yellowing meadows of the upper valley. As we rounded Lake Adolphus, Robson and Resplendent again rose before us, banded and crowned with brilliant clouds. Down in the darkening water, too, clouds and mountains were shining as brightly. Looking into the blue depths I thought that, as far as I was concerned, Robson itself was no less unconquerable than its mirrored image or the crests of cloudland piled above it in the sky.

\* *Arctostaphylos uva-ursi*. Kinnikinic is an Algonquin word meaning a mixture. It is applied also to a mixture of the leaves and bark of several plants — willow, sumac and silky cornel — smoked by the Indians.



## RECORD OF AN EARLY EXPLORATION OF TENAYA CAÑON

EDITED WITH NOTES BY J. N. LE CONTE

THE Sierra Club is fortunate in being able to secure a description of what was certainly the first exploration of the Tenaya Cañon, in the Yosemite National Park. Those of us who have climbed through this rugged gorge, so near to the familiar Yosemite Valley yet so little known in detail, have always considered that John Muir's trip in the early 70's was the first made by a white man. While it probably was the first complete trip through from Lake Tenaya to Mirror Lake, there has now come to light a partial exploration made in 1866 by Mr. Joseph Ferrell. This valuable historical record has been written out by his daughter, Mrs. Mary Russell Ferrell Colton, whose introduction to the diary follows:

"The following is an account, taken from an old diary, of what is probably the first exploration of Tenaya Cañon, made by two young men from Philadelphia, my father, Mr. Joseph L. Ferrell, and Mr. Alfred Jessup, in the year 1866. It will be remembered that the valley had been known to the world for but fifteen years previously, and up to this time had been visited by only six or seven hundred people, while during the year in question 382 tourists came to the Yosemite.\* See Bunnell, L. H., *The Discovery of the Yosemite*, Los Angeles, 1911.

"This was before the days of the railroads in the Great West, and my father and his companion had already crossed the plains with a mule team, encountering many thrilling adventures along the old immigrant trail, en route to San Francisco and the Sandwich Islands.

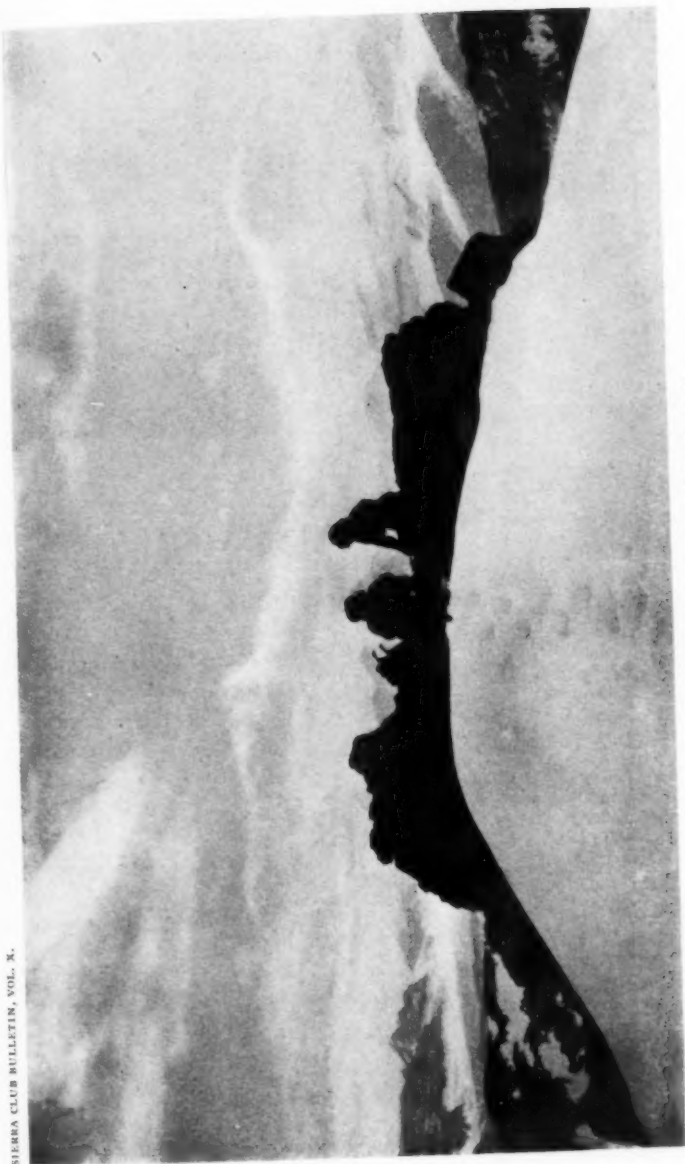
"MARY RUSSELL FERRELL COLTON,

*"Flagstaff, Arizona, September 14, 1916."*

The diary opens on October 15, 1866, at San Francisco, and

\* A map and description of Tenaya Cañon will be found in "Scrambles About the Yosemite," by Joseph Le Conte, *Sierra Club Bulletin*, vol. 9, no. 3, January, 1914.





SOUTHWEST FROM CREST OF MOUNT PAM  
Photo by Marion R. Parsons

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PLATE CXC.



ROBSON AND RESPLENDENT FROM MOUNT PAM  
Photo by Marion H. Parsons

describes the trip by steamboat up the Sacramento River to Sacramento. From this point Mr. Ferrell and party continued by stage to Stockton, and then on by stage to Hornitas and Bear Valley. At Bear Valley the party traveled on horseback, although the road even at that early date extended beyond Mariposa. A short distance beyond White and Hatch's Mill the journey was continued over the Chowchilla Trail to Clark's Station (now known as Wawona), on the South Fork of the Merced. The following day a trip to the Mariposa Big Trees was made, and it is of interest to note that on this trip Mr. Ferrell met Clarence King, of the California Geological Survey. The next morning the party proceeded over the regular trail by Inspiration Point to Hutchings Hotel in Yosemite.

Mr. Ferrell's diary continues as follows:

"*Hutchings*, Monday, Oct. 22d: We got up late this morning, had a good breakfast and afterwards started up the valley to Mirror Lake, about four miles off. We reached there betimes and sat down on the banks gazing on the marvelous reflections of the huge mountains on either side in the water. We spent the whole morning here watching the different phases of scenery, ate lunch, and like great children sailed boats on the lake waters until I concluded to return to the house and fish in the river for trout and write. Mr. J. and the guide, Mr. Stegman, resolved to go beyond the lake and explore a little. I rode back alone at a good jog on my good mare Kate and fished awhile in the clear crystal water of the river without success, and talked the rest of the time with our landlady until supper, when the boys came. They had wild stories to tell of their explorations in a cañon which has never as yet been traversed above some fine falls situated there. Mr. Hutchings tells me they have never been seen and the cañon not known. Mr. J. and Mr. S. are determined to go tomorrow and explore further.

"*Lincoln Cañon, Yosemite Valley*, Oct. 23d: This morning we had a good early breakfast and consequently a good start and rode off up the valley toward the lake. I turned off to the cabin of an old settler by the name of 'Lamon' to enquire all about the topography of the locality to which we were bound. I found that he knew nothing about it and wheeled away and rode to the lake, passing by the rocks to an open grassy glade

beyond, where we dismounted, tethering our horses by long lariats, relieving them of saddle and bridle so they could graze. Mr. J. and Mr. S., taking off their coats, threw them down on the saddles. Cutting great canes to assist us, we started upon the Mono Trail, traversed occasionally by Indians. [Note 1.] For a while it led up the valley through open plots of grass and between huge masses of rock in the deep dark forest. We suddenly turned sharply off to the left, up the mountain, where at once we began to climb the steep ascents following the dim trail of the Indians. It was a work of incredible difficulty to creep and clamber up the mountain side. In very many places we had to climb over the smooth rock for a great distance where the slightest slip of hand or foot would have precipitated one into a horrible abyss. After going on about two hours we came to a place where the trail turned off to the left, winding around to a cañon, up which it wended to the mountain summit.

"Here we halted and held counsel with each other. Our cañon lay off to our right. Above us the summit of the mountain, the slope of which reaching downward was impassable from the smooth rock that formed it. Breaking above us it exhibited an overhanging surface barring our progress in an upward direction. Below us and from a line parallel and extending from our position to our right as far as the cañon, the mountain swept smooth and precipitously down to the base, leaving a bushy, briary space between which it might or might not be practicable for us to reach the cañon to our right. We rested ourselves a while and then summoning all our energies we struggled frantically over the debris of granite and through dead limbs of trees on the verge of the precipice, watchful, half exhausted and yet determined to achieve our project if at all feasible. A long, long and most exciting and fearful struggle we had of it, exploring and fighting a passage over almost impassable rocks and through thickets, where we were torn by

[Note 1.—The Mono Trail to which reference is made must have been an old Indian trail ascending the west wall of Tenaya Cañon between the present Tenaya zigzags and Snow Creek. Mr. Fiske, the pioneer photographer of Yosemite, on being questioned on this subject, says that the Mono Indians had often mentioned the fact that such a trail existed, and that it was in fact their usual route to the valley from the east. Mr. A. C. Pillsbury has made the trip up Snow Creek cañon and reports remnants of an old trail there even at the present date. When the present Tenaya Trail was built no indications of an Indian trail were found along that route.]



briars and our boots worn through to our feet by the sharp cutting edges of the coarse granite. Finally, about two o'clock, we came to the side of the cañon, but found it precipitous. [Note 2.] We hunted hither and thither slowly and most cautiously for means of descent, finally finding a narrow ledge where with infinite care we might get down. Down we did succeed in getting, and right before us saw a beautiful basin of rock with huge boulders forming its sides, which basin was filled with most exquisite water, and into which a cascade of about ten feet fell through the great rocks in foaming flakes, forming a most charming picture. To us who were so fearfully exhausted the sight of the water cheered marvelously. We rushed to it without speaking, and falling down on our faces, drank long and deep draughts from the crystal fountain. Never did anything taste so surpassingly excellent. After resting ourselves and looking up and down the cañon, we ate our lunch and, feeling much strengthened thereby, girded up our loins and began the ascent. Far above, at an angle of  $60^{\circ}$ , we saw the end of the cañon and the summit of the mountain. To the left through a tall pine we saw the lashing of a mighty fall of water, leaping and dashing over a lofty ledge of rocks and falling into the cañon. [Note 3.] Between our position and the cascade lay half the cañon, almost impassable from the titanic rocks chaotically piled one upon another, suggesting doubts of a passage. Above on either side the cañon was a sheer smooth precipice with beautiful ferns feathering every crevice with drooping fronds of emerald green. Through great masses of rock that blocked the cañon the waters hissed and boiled and percolated in foaming torrents, most beautiful to behold. We started our venture up the cañon, clambering, climbing on hands and knees, leaping from huge boulders over cauldron-like basins of foaming waters, exertions calling forth all our strength. Finally, we accomplished the distance which brought us to the base of the magnificent cascades, broad and ethereal, dashing a thunderous sheet of foam below. I climbed up be-

[Note 2.—It would appear from the above that the party must have climbed entirely out of the cañon and over the top of Mount Watkins, descending again into Tenaya Cañon just beyond that great barrier. It is not clear just how this portion of the climb was made. It seems strange that the crossing of Snow Creek is not mentioned.]

[Note 3.—This must be the great fall at the head of the main cañon and just below Glacier Valley. There are two falls here, the large one being above.]

side the cascades to see if there was a perpendicular fall above descending from the mountain summit, and found one perhaps a hundred feet in height. I then descended to the rest of the party and we slowly returned down the cañon to the place where we had entered it. It was then about four o'clock. Mr. J. and Mr. S. concluded that there was a practicable passage down the cañon, and therefore we went down some distance until we were met by a smooth face of rock running all across the cañon where the waters flowed over, making a beautiful fall of a hundred feet in height. [Note 4.] Below it was repeated, forming a second fall. Here we were forced to betake ourselves to the left-hand side of the cañon, the right-hand side being precipitous and smooth surfaced rock. We had to work our way through the branches of oak with great care downward until we came to a spot where from a tree the rock was smooth for about fifteen feet, until we reached a crevice below. Down this place Mr. S. slid on his back and reached the crevice in the rock, with Mr. J. and myself after him. On reaching this place below we made the rather startling discovery that below us the mountain showed a smooth, precipitous face of rock for perhaps a hundred feet. An old trunk of a tree lay before us and it was proposed to lower it and work our way down to a ledge below on it, but even then we could not be certain that we would not meet a more extensive and formidable precipice below that point, so that design was abandoned.

"Night came creeping on and it behooved us to adopt some plan. We were standing in a crevice of rock about a foot in width and ten or twelve feet long, a precipice above and one below and the cañon beside us, with the swiftly rushing waters gliding over the glassy surface of the rock, falling in impalpable mist a hundred feet below. Our position was truly perilous, and it was with great delight that we discovered that Mr. J. had had the forethought to bring a rope with him in the morning. He had worn it around him and now he produced it. Mr. S. and I first pushed him up the rock that we had slid down until he was able to reach the ends of the limbs overhanging the rock, when he drew himself up and, tying the rope to the limb, threw it to Mr. S., who, with my aid in pushing his

[Note 4.—This was probably at the upper entrance to the box cañon.]



CARIBOU, VALLEY OF CALUMET CREEK  
Photo by Marion R. Parsons



LOOKING ACROSS BERG LAKE

Carlson Range and slopes of Mt. Lassen in distance  
Photo by Marion R. Peterson

feet up, got up beside Mr. J. I followed, holding on to the rope and, when within distance, was seized by Mr. J. and drawn up to them. In the gloom of the evening we retraced our steps and after a hard clamber reached a flat rock, overlooking the upper of the two falls, surrounded by great rocks. Here we concluded to camp out all night in preference to attempting to get down in another way on the mountain or in seeking our trail of the morning. Whilst there was yet a little light left, Mr. J. got some wood, of which there was plenty near at hand, and built a good fire on the flat rock, while Mr. S. went out to see if he could find some other way to get out of our difficulty. He soon returned, however, and we three sat down by our bright fire in doleful anticipation of a cold and cheerless night, hungry, without even coats to shield my companions from the cold air that followed the rushing water down the cañon. Mr. S. improvised a bed to obviate the necessity of lying on the hard rock by cutting the leafy branches off the near trees and placing them beneath us. We all lay down by the fire, quiet and yet unable to sleep, the fire toasting our side nearest it while the wind chilled the other side. Mr. S. found a semi-cave in which he built a fire and made a bed for Mr. J. in which he was shielded from the wind. The night passed slowly and drearily.

"*Hutchings*, Oct. 24: The moon shone beautifully down in the valley and about midnight stood above our deep cañon, gleaming on the worn rocks and intensifying the shadows. The morning, as it drew on, brought with it more intense cold, and all the wood we could throw on our fire failed to ward off the chills. Dawn at length stole in upon us and we prepared to seek our trail of yesterday. We plodded over the rocks and got up upon the mountainside, where with much labor we succeeded in following up the trail until it struck the main Mono trail. Then, as fast as possible, hurried down into the valley, put the saddles on the horses, poor animals who had suffered for want of water, and rode as fast as we could to Mr. Hutchings' house. Here all day we have been lying listlessly about the house, reading and whiling away our time, resting ourselves and preparing for our trip to the Nevada and Vernal Falls tomorrow."

## THE WHITE MOUNTAINS OF CALIFORNIA

BY WILLIS LINN JEFSON



ZEST of botanical exploration and the perennial desire for the open of the back country had long combined to whet my desire for a summer's work in the White Mountains of eastern Mono and Inyo counties. They form one side of the great Owens Valley trough, and they rise as abruptly from the valley floor as does the Sierra Nevada wall to the west.

Our way of approach was by Silver Cañon, a characteristic cañon of a desert range. Opening into Owens Valley it runs eastward in a nearly straight line for six miles, directly into the White Mountains. As is usually the case in such cañons its narrow floor seems nearly level, but the gradient is about ten feet in ten to sixteen rods. At the point where the cañon parts into three forks our party of scientific men made camp at 6500 feet in order to spend some days in field work on the mammals, birds, and plants. Just at this point in the cañon there is a narrow band of a desert Mahogany (*Cercocarpus intricatus*) on the cañon wall, a species remarkable for its minute leaves. A gay border of moisture-loving plants edges the swift streamlet in the bottom—yellow Monkey-flower, an annual Indian Paint-brush (*Castilleja stenantha*), a Columbine, the same as the coast species, and Desert Crowfoot (*Ranunculus Cymbalaria*).

On our journey to the summit of the range we follow the left-hand or northerly fork, which is really the continuation of the main cañon, finally leaving the cañon bed and zigzagging up its easterly wall. Very soon we enter the zone of the Piñon or One-leaf Pine, which forms here a very fine forest—very open, of course, but giving a distinctive character to these slopes and narrow benches or flats on the mountain side. A full-grown tree is inclined to become very individual, and not a few of them develop the habit of a Coast Live Oak, some standing out in high relief on the steepest rocky walls, some on the little level benches. Towards the upper limit of the Piñon, the com-

mon Desert Mahogany (*Cercocarpus ledifolius*) forms bands on the ledges of the cañon walls up to altitudes of 7500 or 9000 feet. These shrubs have here a blue-green aspect, but of darker tint than the blue rock ledges which they follow.

At 8500 feet one leaves the Piñon and enters a zone of the Limber Pine (*Pinus aristata*). Like every so-called forest in a desert range of mountains it is very open. The trees are mostly short and stocky, that is, twenty to forty feet in height, sometimes fifty-five feet, with extreme trunk diameters of three or four feet. The bark is a light-colored drab, with streaks of black in the fissures. There is practically no underbrush, although occasionally one finds a fine clump of Desert Spiraea\* (*Chamaebatiaria millefolium*). Leaving the forest the trail leads for seven miles through a sagebrush association where grow a number of interesting herbs, the Sego Lily, various *Eriogonums* and *Arenarias*, a *Silene* and a *Lupine*.

Just northeast of Big Prospector Meadow camp was made at 8300 feet, on the headwaters of North Fork Crooked Creek. Springs in this range are very scarce, but we are fortunate in having by the camp a fine spring pouring from the granite rocks.

After some days at this point I leave the remainder of the party and start for the highest point in the range, White Mountain Peak. I elect to trail along the sides of the range some distance, instead of climbing at once to the axis. My way leads over a low ridge north of the camp and down into and along Poison Creek, through a luxuriant growth of Tall Larkspur and *Selinum*, a luxuriance contrasting strangely with the scanty, or at least desert-like, vegetation of the mountain sides. After two miles I turn to the right up a fork of the stream and cross a low divide to a small tributary of Cottonwood Creek, the main water channel of this region.

One of the members of our party saw mountain lions a few days ago at Cottonwood Creek, and as I proceed down the tributary to the main stream I hope to glimpse one of the big cats. Huge blocks of granite lie at right angles, often molded into dome forms or semi-orderly structures. One looks up the little lateral cañons as one passes up the main stream and sees

\* See *Sierra Club Bulletin*, vol. 9, p. 42, 1913.



miniature El Capitans rising from dainty green meadows bordered with flowering herbs.

The flowering herbs in this cañon are of especial interest and so engross my attention that lions are quite forgotten. My botanical press becomes heavy and still more heavy until I am interrupted by a Mexican vaquero, of whom I inquire about the trails to the peak and finally about lions. "But where is your gun?" says the Mexican. "Oh, I never carry arms" is my reply. "El Americano!" I heard him exclaim, as he turned his horse down the trail.

Hours of steady pulling over the rock-strewn bed of the upper Cottonwood brings one finally to the summit of the range, and I start northward along the plateau, passing the night at McAfee Meadow. The next morning the way is still northerly along the axis, White Mountain Peak in full view, standing up out of the range like an eagle's beak with the perpendicular wall to the west.

After reaching the face of the peak proper it is simply laborious climbing for near fifteen hundred feet up, over a wilderness of angular blocks. The United States Geological Survey bench-mark on the summit at the monument gives the altitude as 14,242 feet, which is higher than any of the peaks in the Yosemite group across the gorge of Owens Valley. That is to say, it exceeds Mt. Dana by 1192 feet, Mt. Lyell by 1152 feet, and Mt. Ritter by 1086 feet.

At the summit of the peak grows the Alpine Polemonium (*P. eximium*), extending down the slopes to 13,500 feet. An alpine Erigeron grows within one hundred feet of the summit, these two species being the only plants found above 13,900 feet. Between 13,200 and 13,900 feet were found a species each of *Hulsea*,\* *Calyptridium*, *Draba*, and *Potentilla*. In addition the yellow-flowered Alpine Buttercup (*Ranunculus Eschscholtzii*) grows on the rocky slopes at 13,700 feet. This is a remarkable species, being the only truly alpine species of buttercup in the high mountains of California. It extends far northward to Alaska and the Aleutians. It only remains to be said that the

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\* *Hulsea algida*, which is a characteristic alpine of the highest Sierra peaks, from Mt. Whitney to Tower Peak and Mt. Rose. On Mt. Whitney it is found nearly if not quite to 14,000 feet, ranging higher on that mountain than any other species of flowering plant observed by the writer.



LEGENDS FOR FIGURES

Fig. 1. Flats of the axial plateau, about 11,500 feet, between McAfee Meadows and White Mountain Peak, the latter the highest point at the left. The upper limits of the forest band of Limber Pine (*Pinus flexilis*) and Hickory Pine (*Pinus aristata*) show on the slopes of the eastern mountain wall to the right

A. C. Shelton photo

PLATE CXIV.



Fig. 2. Summit of White Mountain Peak, from a point at about 14,000 feet

A. C. Shelton photo



CAMP AT YOUNG LAKE  
Photo by Walter L. Huber

number of plant species on the peak proper is very small and the vegetation is exceedingly scanty.

If one is a pigmy one cannot view a giant very well by standing at his feet. One does, to be sure, obtain a certain impression of the vastness and height of the eastern wall of the Sierra Nevada by standing at its base in the Owens Valley; but these impressions are not in any wise comparable to the impressions thronging instantly on the mind as one surveys the Sierra from the altitude of White Mountain Peak. The high snow fields and plateaux and peaks unfold in a way to reveal unexpected and unusual grandeur. It is a revelation of the highest Sierra—almost as if one were viewing them from the vantage point of a separate planet which had wandered near.

In the end of April and early May it was my fortune to be in Death Valley, whence a trip was made into the Panamint Range, of which the dominating height is Telescope Peak, 11,045 feet in altitude. The situation of Telescope Peak, its distance from Mt. Whitney, and its altitude combine to render it an unequalled view-point for comprehension of the premier mountain chain of California. From this pinnacle one sees the Sierra Nevada rising from the great interior plateau as an unbroken wall barring the westward way. One is thrilled with a new sensation, for he feels that he sees the whole snowy range. There it comes, out of the far distance from the Mt. Ritter group of peaks, down to University Peak and Mt. Williamson, curving down to Mt. Whitney, Mt. Le Conte, and Mt. Langley, curving steadily on to Olancho Peak, and always without pass or break, and still curving steadily on westerly till lost in the Double Peak of the Tehachapi Range, thus enfolding to the westward that mysterious land, the light of which one sees through a purple haze beyond the line of snowy peaks.

To my mind no other view of the Sierra Nevada equals this in romantic character. From no other point does one so nearly seize the whole mighty chain in one sweep of the eye; from no other point is the contrast of the desert ranges so impressive; from no other point is there greater possible appreciation of the Sierra Nevada as a barrier, especially in its relation to the westward migration of men.

The White Mountains, however, far surpass the Panamint

Range in extent and height, and in area and persistence of snowfields. The name White Mountains does not seem happy, but certain granite peaks of the range are said to show white as viewed from the northwest. The term "White Mountain Peak," which is used for the highest point by the United States Geological Survey, seems especially awkward and unfortunate. An alternative name, Mt. Olmsted, appears on the Forest Service map of the Inyo National Forest and is much to be preferred.



### MOUNTAIN CLIMBERS

BY ARISTIDES E. PHOUTRIDES

Under sun-enamored shades  
Born of cedar, pine, and fir,  
Through the flower-spotted glades  
Where the fleeting insects stir,  
Past the valleys, past the hills,  
Up the singing mountain rills,  
Upward! Upward!  
The blithe climbers go!  
Upward! Upward!  
Past all things below!

To the lofty mountain peak!  
To the snows that touch the sky!  
Where the tongues of ages speak  
With eternal voices high,  
Echoed in their endless rhyme  
By a bournless space and time!  
Upward! Upward!  
The blithe climbers go!  
Upward! Upward!  
Past all things below!

(FROM LIGHTS AT DAWN)

*Kern River, California,  
July, 1912.*

## THE CLIMB OF DUNDERBERG VIA VIRGINIA CAÑON

BY GEORGE C. THOMPSON

THE encampment of the Sierra Club in Tuolumne Meadows during July, 1917, was, from every standpoint, a success, and from many standpoints an unqualified success. It pursued, in the main, the objects for which the constitution of the club declares we exist. It is a matter of common consent, however, that the side trip, those few days when kindred spirits become knights of the road, is the *pièce de résistance* of the summer outing; for it is then you see the finest views, climb the highest peaks, get the biggest appetite, and catch the most unheard-of trout. It is then, too, that you readily find out what stuff your comrades are made of.

Last summer's outing can boast of at least two such trips that had the zest of newness and romance, and that, too, within a bow-shot—of course I mean a Sierra bow-shot—of the Soda Springs. They were the trip to the Ten Lakes Basin, and the climb of Dunderberg via Virginia Cañon. The first, Ten Lakes Basin, does not come within the scope of this article. The five-day Dunderberg trip, however, I shall attempt to describe briefly, having been in the thick of it as a fly-caster and humble member of the commissary.

When it became noised along the rocky slopes of Parsons Ridge, I almost said Parnassus Ridge, that a five-day trip was being planned to explore Virginia Cañon, climb the forbidding pile of frowning rock, properly known as Thunder Mountain, that stands sentinel over the desert, and return cross country via Young Lake and Mount Conness, there was unusual stir and excitement. And when it became farther known that that intrepid and insatiable mountaineer, Walter Huber, was to be commander-in-chief of the expedition, and that he was to be assisted by Mrs. Parsons, it was soon a question whether it would be a side trip or whether we would have to move the entire camp, Soda Springs, Toy Gong, Tap, and all, in order to

accommodate the numbers. It was finally agreed, however, that twenty should be the limit of the party, and that for convenience of commissary and general handling they should be divided into two platoons of ten each.

And so we set forth, bag and baggage, with the most efficient of packers and five pack animals. The first night found us by our camp fire at Conness Creek, dining on rainbow trout, and afterwards mingling our voices in true Sierra Club fashion in hymns of praise and thanksgiving. On the other side of the creek, Ray Bailey and his Rodgers Lake revelers were making their best efforts to prove that they were the true and only dwellers in the mountains. But they failed. We were it. So we thought and so we still believe. We were off to an unknown land—a valley lying somewhere to the northeast, guessed at, but unknown—and a still more mysterious mountain beyond. We had been to Rodgers Lake and knew it by heart. But no one, as far as we knew in the history of the Sierra Club, had been up Virginia Cañon and to Dunderberg. And so with lusty voices we proved our right of primacy far into the night. At last the fire died out and the winds and tumbling streams sang us to sleep.

The morning of our second day found us still on familiar ground, up Cold Cañon and over the ridge following the Matterhorn trail as far as Return Creek. Return Creek is the name given to the stream formed by the junction of Spiller and Virginia creeks, so Return Cañon and Virginia Cañon are, in fact, geographically one. The same stream heading in Virginia Cañon flows through both. At the point where the main trail crossed the creek we picked up the Virginia Pass trail, running northeasterly and following closely the stream.

Virginia Cañon is one of the many spots in the Sierra that owe their beauty and charm to what may be called their intimacy. You leave the rest of the world behind; you are visiting a friend at home, in the seclusion of a quiet beauty that is denied the world in general. To add to its charm you have not only meadows of rare flowers, but on either side the most perfect tamarack-pine forests that I have seen anywhere. Not a single dead tree up to the very sky-line mars the unbroken sweep of glistening green; and, best of all, the trail, which



PLATE CKCVI.



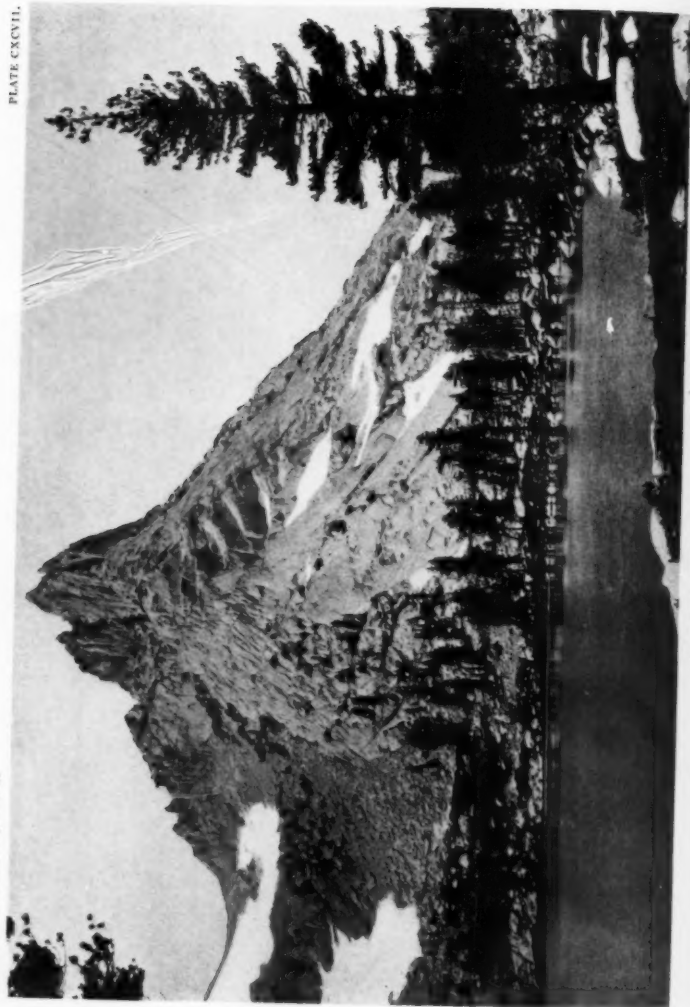
SIERRA CLUB BULLETIN, VOL. 28.

CAMP IN VIRGINIA CAÑON, BELOW SHEPHERD CREST

Photo by Walter L. Huber

SIERRA CLUB BULLETIN, VOL. X.

PLATE CXCIV.



RAGGED PEAK AND YOUNG LAKE  
Photo by Walter L. Huber

within a few years has been reblazed at the lower part of the cañon, suddenly gives out, and you are your own trailmaker. Open meadow follows stretches of forest, and forest succeeds delightful flower-scented glades. If you are careful, you are further repaid with the sight of soft-eyed deer, looking at you from the tangled underbrush, unafraid. The birds, particularly the thrushes, are fluting their dreamy songs from brush to mountain side, and the chickadee sings his love song.

We had evidence abundant that this is the true home of Apollo and the Muses. In fact one of our number had strange stories to tell of a lost trail leading to secret haunts where the sense of direction becomes confused and where, in bewilderment, one lies down and dreams to the music of unseen choristers and is wafted away under the tricky guidance of Pan and the water sprites. Yes, it is an intimate, a lovely, a friendly cañon, with a stream in its midst that has every virtue that a stream could have—babbling noises, tumbling rapids, cold, crystal pools, moss-lined and tanglewood banks, and overhanging shelves where the ouzel dips with lightning speed—everything!—with one exception. In vain did the best of fishermen, even the unexcelled d'Estrella, speed the singing line upon the foaming pools and change from fly to fly. Sad but true, the trout is a minus quantity. Still the trout is not always necessary, and we had ample compensation, an appetite and a thirst "you couldn't buy," and a meal truly fit for the gods.

And then as we sat in the gathering twilight, listening to the music of the stream and the last song of the thrush, we were suddenly aware of a miracle. The entire valley was transformed into a bowl filled to its brim with molten gold, while Shepherd's Crest, with its mantle of snow, blazed in the last rays of the sun like a great amethyst. We sat in silence for a long time watching it until gradually the light faded and the long shadows dropped into darkness. It was a scene that none of us can ever forget.

And then such a camp-fire as we had, soaring high above and lighting and lifting higher still the splendid tree tops that seemed to lose themselves in the sky! Songs, stories, a round table of friendly jest and reminiscence, and we are safe again in our sleeping bags upon "rock and cones imbedded deep."

Morning brings the third day, and while still the dipping stars were winking and the shadows filling up the valley, even before the highest point of Shepherd's Crest had felt the morning's breath, we were up and away. A climb of a thousand feet brought us to Summit Lake and in full view of Thunder Mountain.

Here the ways divided, and while the bold spirits turned their faces to the storm-defying heights, the slackers and a large part of the commissary contented themselves with climbing to Epidote Peak, and, dreaming in the sunshine, picking out the various peaks and lakes, and watching through field glasses the intrepids scale the frowning cliffs.

Dunderberg is a mountain of multi-colored rock, steep as to its sides, broken as to the rocks, and slippery, shifting, red and hot as to the uncertain shale. It also has snow on the side—steep, unclimbable snow—and on top, when you get there, a big monument of more broken rocks. It is easy to come down, but not exactly safe as to the coming. Rennie, the Mountain Goat, makes a bee line down ravines of crushed shale and fetches up, in a few thousand dashes, in something like twenty-three minutes, at the bottom. Others come more slowly, and with caution. After you have climbed it you are glad, and when you get back to camp you are gladder still. Those left behind at camp are glad, too, for they have kept dinner waiting, and they show their joy by unusually friendly greetings, and by handing out dainties that you never knew existed, such as onion and potato salad. I forgot to state that the elevation of this Thunder Peak is 12,365 feet.

Do not be too hasty, however, in deciding not to climb Dunderberg. The real and most important reason for climbing any mountain is the getting there and the things one can see from the top. Measured by this standard, Dunderberg ranks second to few in the entire Sierra. In fact it is the vantage point of this entire region, and commands on all sides views which are simply superb. Bridgeport Valley to the north, Monument Ridge and Saw Tooth Ridge to the north and west, Dana, Gibbs, Conness, Lyell, and many other old friends greet you from a new angle. Saddlebag Lake, Virginia Lake, East Lake, West Lake, Greek Lake, and innumerable others—even Hoover

Lake—winking with laughing eyes of blue, send their glistening light to greet you. Beyond, to the east, mysterious, silent, desolate, shadow-like, filled with shifting rainbow colors, lie Mono Lake and Mono Desert.

At the campfire that night, amid stories of adventure, narrow escapes, scientific discussion, etc., it was clearly demonstrated to the entire satisfaction of the twenty campers, and to the packer, that if a flying body, Homer Miller, for instance, in a mad leap for lower ledges, comes in contact with a splinter of Dunderberg, it is eminently fitting and necessary that he come into camp last of all, and that he occupy his place at the camp-fire in his sleeping bag, in order that Miss Bridges may illustrate with needle and thread a new use for bandanas.

Our cross-country trip from Virginia Cañon to Young Lake, where we camped for the last night, was a constantly shifting scene of forest, stream and mountain, with many surprises as to distances. Young Lake, only a short distance from Soda Spring, has not received the appreciation to which it is clearly entitled. We voted it by acclamation a spot of almost unparalleled beauty. Ragged Peak, White Mountain and Conness, so encircle it from various sides that its setting is one of wild beauty unsurpassed. The stunted trees, the broken granite boulders, the snow edging its way into the waters of the lake, the restless waves that nervously rock themselves from cliff to sandy beach, all add to the impression that this spot is very far from the world. One could well believe that no human being had ever visited it until his eye falls upon a bit of obsidian, or an exquisite arrowhead, giving evidence that in a bygone age here was once a happy hunting ground of the Indians.

The last day brought us to the top of Conness, and back by Young Lake and the circuitous contours of Ragged Peak, to the base camp at Soda Springs. Blessed is the side trip, so say we all; blessed is the spirit of the mountains; and blessed are the streams of crystal water and ice-cold plunge in lake and pool. The stars are blessed, too, showing in untold myriads so friendly and near. Blessed is the thunderstorm, and the sweet mountain rain, and the trees and flowers that hold up grateful heads. And blessed beyond all the comradeship that no one knows who has not tested its sweetness in the High Sierra.

## KNAPSACKING IN THE KINGS-SAN JOAQUIN REGION

By A. L. JORDAN

ON THE 12th of June, 1917, we left Cascada, the terminus of the San Joaquin and Eastern Railway, with knapsacks and outfits weighing between fifty-five and sixty pounds apiece. My companion was Mr. H. H. Bliss of the University of California. We traveled via Huntington Lake and Badger Flat to Kaiser Pass, where we had a fine view across the South Fork of the San Joaquin of Saddle Peak, Red and White Mountain, Mount Abbott, Mount Gabb and others. The South Fork seemed larger than the Merced at Yosemite. We had a bath in the hot sulphur spring, then crossed the suspension bridge and went onward.

Leaving the trail, we explored a peculiar rock mesa which we had seen from the pass. It was of volcanic nature and had vertical cliffs, accessible in only one or two places. We called it "Jericho Mesa." We next came to Mono Meadow and then to Vermilion Valley, where we passed through some aspen thickets and noted many evidences of avalanches. On leaving Mono Creek we entered a country with no trails, and going on into the Second Recess, climbed the steep right bank of Mills Creek at about nine thousand feet.

Here we discarded our moccasins, put on caulked shoes and began "hitting the snow." On the way to the pass a large coyote was seen, and the tracks of many others were noticed in the snow. We called it "Coyote Pass" (12,200 feet). Leaving our packs here, we started for Mount Gabb, and finding only a few steep places, reached the summit about two o'clock. The reward was one of the finest views I have ever seen—a great vista of gigantic peaks, rock-masses and snow. Finding no evidence that the peak had been climbed before, we made out a statement, placed it in a "dehydro" can and left it in a cairn on the summit. The elevation marked on the map is 13,700 feet.

We made a speedy descent, resumed our packs and started



CONNESSE GLACIER FROM THE MOUNTAIN SUMMIT  
Photo by Walter L. Huber



SIERRA CLUB BULLETIN, VOL. X.

PLATE CCXIX.



FOURTH RECESS, FROM THE MONO TRAIL.  
Photo by Paul Redington

on. The great shadow of the mountain warned us that we had but three hours of daylight in which to get down to timber line. The packs were heavy and we were tired and the shore line of Lake Italy is a long one. As one weary pilgrim put it, "That lake is strung out like a piece of macaroni!" So it seemed quite a time before camp was made, at 10,800 feet, in the Hilgard branch of Bear Creek. The nearby peaks were bathed in the beautiful pink of the alpenglow.

Next day we went on down Bear Creek, crossed the branch on a rough log bridge about a quarter of a mile above the junction, and continued on up the right bank of the East Fork. Here we had to make our first ford. The water was not up to our waists, but there were ice-floes near and H. H. did not like the temperature. A little farther on we left our packs again and climbed Seven Gables (13,066 feet). There were a few cliffs and one chimney with slide-rock, but most of the climb was plain snow-plugging. So far as we know, the peak had been climbed only by Messrs. Le Conte, Cory and Hutchinson before us. The next day we went on to a gap ahead which we christened "Hardscrabble Pass" (about 12,200 feet), then made quick time over the snow down to Piute Creek in French Cañon. We made camp here, though we walked farther down to the junction with the San Joaquin and saw the fine new bridge across the creek.

On our way up the stream the following day we saw a big porcupine, and had great fun trying to get him to pose for a photograph. Passing on up Piute Creek, we got a fine view of Mount Humphreys (to the north) and at last reached Piute Pass. We noticed that some timber extended clear to the top (11,400 feet). Plunging down through the soft snow, we followed the North Fork of Bishop Creek to a wooded region called Bishop Park. Farther on we came to the intake for one of a series of hydro-electric stations and spent some time examining the gate mechanism. We were then being scrutinized by the watchman, not only because of our unshaven and vagabondish appearance, but for a reason which will appear later.

Following the pipe line, we soon reached Andrews' Camp, where we were welcomed by the proprietor. We had been

thirteen days from Cascada and our packs weighed about thirty-seven pounds each.

After resting and loading up with groceries we were ready to depart. Mr. Andrews called us aside and told us that the telephone wires were hot with instructions for the men at the next dam to be on the lookout for "two fellers with packs who acted suspicious and might be German dynamiters!" We thanked him and started. Our packs now weighed sixty-eight pounds apiece, so we found that one mile was far enough for that evening. We went on up Bishop Creek, past South Lake, and at the end of the day came to the most beautiful campsite of the trip on the shore of Long Lake. The lake is set like the jewel of the poet, between great colored mountains. Our camp was in a little clump of limber pine and tamrac. The elevation is 10,800 feet. We were awakened by our familiar friend the Gambel sparrow, who sings just before dawn, and we rose while the stars were still visible. The lake was frozen nearly over.

On our way up toward the pass we met two young men from Bishop, with five burros, who were returning after their second attempt to get their animals over. After a long hard climb we reached Bishop Pass and crossed into Fresno County again. Our course was now over great snow-fields into the headwaters of the Middle Fork of the Kings. It was after midday and the snow was soft. My companion was ahead breaking trail when he went through the crust and wrenched his ankle. Luckily we had reached timber line, and we soon found a good camping-place on the Dusy branch, where we stayed for two days. I explored a little, finding one easy pass (for knapsackers) over into the Palisade Basin. We finally got off again, myself with the larger load, down, down, into the cañon of the Middle Fork. The injured ankle improved rapidly and we made the junction of the Dusy branch and the river. We here struck a recently completed portion of the John Muir Trail, so travel was easy. After awhile the trail stopped. The workmen had blasted a way half the distance up a water-worn cliff and then quit for the season. By using the rope we worked our way up a cleft in the rock. Toiling upward slowly, we camped on the edge of a lakelet, about a mile

below Helen Lake. Ice had to be broken before we could get water for cooking.

We were up next morning while it was yet dark, and got breakfast as the alpenglow lit up the mountain side. Then followed a great climb over the snow, where little ice-chunks made a curious tinkling sound when kicked off by our shoes. One ice-cave with some fine stalactites was seen. Reaching Muir Pass (12,059 feet), we crossed into the Evolution Creek region, then found a way directly opposite the middle of Wanda Lake over into North Goddard Creek. We dubbed this "Laggard Pass," the name telling how we felt. Trudging onward down the creek, we passed one fine lake and camped at the first scrubby timber near another. This was our highest camp—11,000 feet. Leaving the left bank of the creek about a mile above where it enters the South Fork of the San Joaquin, we worked over into the cañon of the main stream. Here at short intervals the river leaps gleefully in most beautiful waterfalls.

A good place to ford was found about a hundred and fifty yards above where North Goddard Creek comes in, and H. H. spoke "full and free" concerning the coldness of the water, the swiftness of the stream and the roughness of the stones on the bottom. The trail led on along the bank of the clear, rushing river. We missed the Hell-For-Sure trail and camped on the very brink of a fine fall, whose roar lulled us to sleep. It was the most romantic of all our camps. Up at dawn, we "hit the side of the cañon." Using the map, also the note of Mr. Le Conte's party,\* we came up near Red Mountain. Here we had to go down hill some distance, and bearing to the left, were forced to cross a mile or more of slide-rock, but we finally reached the pass with the appropriate name (11,300 feet). A great contrast was offered by the views to the east and to the west. The former was one of a country smothered in snow, the latter of lakes in their natural blue color, some bare earth, and in the distance trees and green meadow.

This point marked this portion of the trip into two parts, the remainder being in what seemed low country. After some tramping over granite, we came to forest country and again

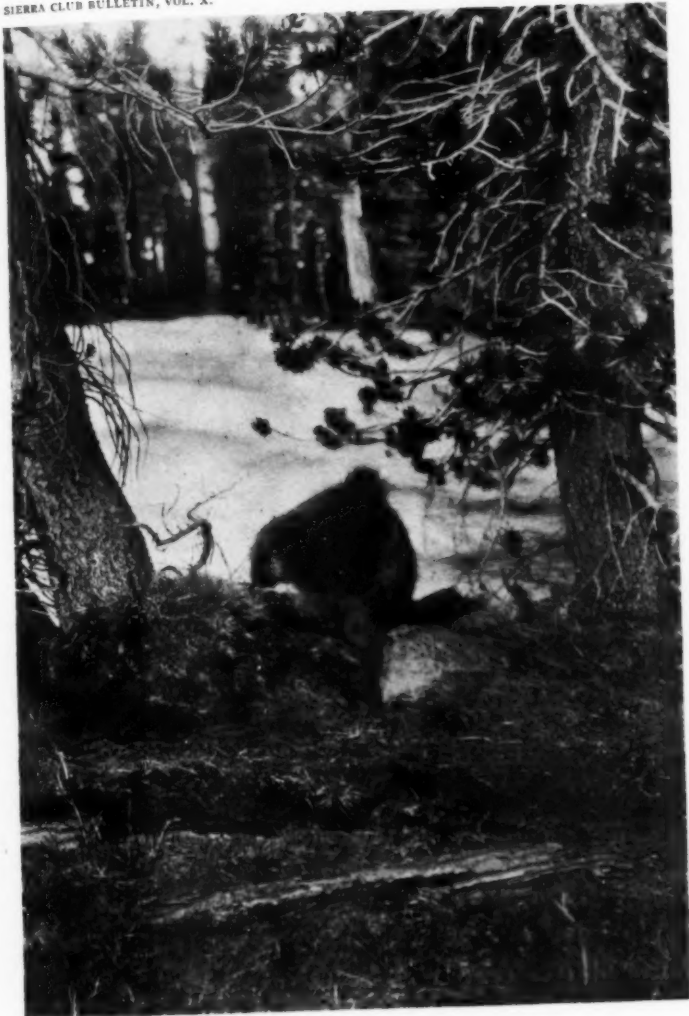
\* See SIERRA CLUB BULLETIN, vol. II, no. 3, page 260.

heard the "harp of the winds" in the trees. This was a well-ducked and well-marked trail through woods sometimes open and cheerful, sometimes dark and gloomy. Walking on through Post Corral Meadows, we reached Sand Meadow (Helms Creek), where I prepared for a little nap. H. H. started fishing. I was awakened by wild yells, and as soon as I could get my eyes open beheld H. H., the rod bent almost double, struggling with a large trout. After helping him get it ashore (it was almost a foot long), I returned to my nap. Very soon there was a duplication of the performance, so I gave it up and started supper. We got eleven beauties all told, the first real fishing of the trip. They had the ordinary markings, and what was new to me, the fine bright red spots of the Eastern brook trout.

Next day we went on upward, noting a pair of fine gray foxes on our way through the forest. The trail here passed through magnificent forests of red fir, tamrac, white fir and sugar pine. Near by dozens of beautiful snow plants were seen. We finally left the trail and struck out across country to try to find the McKinley Grove of Big Trees, marked rather indefinitely on the maps. Upon climbing to the top of a huge rock, great was our joy when we made out a number of the sequoias among the thousands of trees visible. After plunging through the brush we came upon one of the giant redwoods and knew that we had found the grove. The impression was that of entering a great cathedral, and we went in with our hats off. The wonderful coloring and size of the trees are always soul-stirring. The grove is a small one, but is almost unspoiled by tourists, and pin-headed officials have not yet labeled the trees "General Wellington," "General Napoleon," etc.

We now resumed our journey, and passing down Laurel Creek, approached the Dinkey Ranger Station. The first man we talked with since leaving Bishop Pass was a cook for the outfit of J. Robinson, well known to Sierra Club people. We rested at the station, then trudged on over a dusty road, thinking of the clean and dustless country left behind. Luckily, a delightful camp-spot was found, where a clear stream gushed out of a fragrant group of azalea.

Our walk next day was through a most desolate region of



PORCUPINE, PIUTE CREEK  
Photo by H. H. Bliss



PEAK NEAR LONG LAKE  
Photo by A. L. Jordan



stumps and rotting timber; the forest had been lumbered and no effort made to burn refuse. It was very depressing all the way to Shaver Lake. At the lumber company's store we got a few luxuries and then went on. The following day brought us to the Stevenson Creek station of the San Joaquin and Eastern, a short distance from where we started. We were not yet out of food, though we had been out just fifteen days from Andrews' Camp. With a little care, we could have gone seventeen or eighteen days.

NOW the sun has come out after the storm, how bright, how full of freshness and tender promise and fragrance is the new world! The woods putting forth new leaves; it is a memorable season. So hopeful! These young leaves have the beauty of flowers . . . After a storm at this season, the sun comes out and lights up the tender expanding leaves, and all nature is full of light and fragrance, and the birds sing without ceasing, and the earth is a fairyland.

*Thoreau's Journal*

## THE JUNIPERS OF LAKE VALLEY

By CORNELIUS BEACH BRADLEY

ONE day last summer, while driving through Lake Valley at the upper end of Lake Tahoe, I was surprised to see among the yellow pines and tamaracks of the open forest certain trees that seemed to me new. I thought that I knew all the trees in that part of the Sierra. My companion pronounced them tamaracks (*Pinus contorta* var. *murrayana*), which indeed they greatly resembled in stature and in habit. But the tawny-gray fibrous bark and the finer sprays of foliage convinced me that they could not be that. On examination at a later time we found that they were junipers, but so unlike the forms of *Juniperus occidentalis* with which we were familiar that we were compelled to suppose them to be of a different species—possibly one that had worked its way over from the eastern side of the range through Luther's Pass. But on my return to Berkeley the specimens of foliage and fruit which I had brought with me were identified by Dr. H. M. Hall as undoubtedly those of *J. occidentalis*.

The features of these trees which had puzzled me were: (1) their unusual situation on the floor of a deep sheltered valley, instead of on the exposed rocky slopes of the Sierra ridges; (2) their close association with other conifers instead of being scattered about singly in the open; (3) their stature, reaching eighty or ninety feet—twice or thrice that of the tree in its usual habitat; (4) their symmetrical shape and aspiring habit which here persist even to old age. For, while this feature is common throughout the whole group of cypress-like trees, and regularly appears in the early life of this species, it is lost long before maturity by those individuals which face the Sierra storms unprotected.\*

Another feature which impressed us later was the frequent occurrence in this group of the twin or double tree, as seen in plates CCII and CCIV. This also occurs, but I think not so

\* See plates CC and CCI.

frequently, among junipers which grow on the exposed mountain ridges. The double tree might in reality be a single one which forked very early in life because of the loss of its leading shoot; or it might be two trees which, germinating near each other, grew at length large enough to touch and then to mingle into one common trunk. But why should this be more common among these junipers than among the yellow pines and tamaracks about them? Here surely is an interesting problem for some one to solve.

Here then was a group of some hundreds of these trees scattered about among the pines of the valley floor between Myers' station and the forest-ranger's cabin some two miles to the south. They seemed moreover to be strictly confined to this area. None were found either to the north or to the south of it. Right through the center of it runs the automobile road to Luther's Pass and Markleeville. Hundreds of campers and tourists pass through it every season. Yet it seems never to have come to the notice of our botanists. Indeed Dr. W. L. Jepson tells me that he has never known of such a group of these trees, although he has known of exceptional individuals of their stature and habit.†

The special characters of this group are due no doubt to the richer soil in which they grow, and to the protection against storms afforded both by the high ridges east and west of them and by the other forest trees growing about them. Since similar conditions are by no means uncommon in the Sierra at this altitude, it seems altogether likely that such groups might be found elsewhere, if people were only on the lookout for them.‡ I hope that members of the Sierra Club and other persons interested in such things will, on their summer rambles, keep this matter in mind, and especially that they will not fail to report their findings.

The fact that a number of these trees had recently been cut to furnish posts for some miles of fencing on the road to Tallac, led me to take up the question of their age. The trees

† In his monumental *Silva of California* (1910) the only notice of this exceptional type is the following sentence: "In protected localities they present regular figures forty to sixty-five feet high, and sometimes six or seven feet in diameter."

‡ Since writing the above I have learned of the existence of a somewhat similar group on the South Yuba, between Cisco and the Summit.

felled for this purpose were all vigorous and clean-growing junipers in their young prime, from two to three feet in diameter, and from sixty to seventy feet high. From my notes I select the following typical counts of the annual rings of growth.

No. 1. Prostrate trunk, one of the two trunks of a double tree. Section at 10 feet from the ground. Diameter 24 inches, 247 rings.

No. 2. Stump. Section at three feet from the ground. Diameters 27 and 36 inches, 236 rings.

No. 3. Prostrate half of a double tree which had stood 70 feet high. Diameter at 10 feet above the ground, 28 inches, 255 rings.

No. 4. A fine double tree, still in vigorous growth; each trunk nearly five feet in diameter, and the combined trunk nearly nine feet. A superficial cut to a depth of  $1\frac{1}{8}$  inches showed 40 layers of growth.

In order to bring these results to bear upon the question of the age of junipers growing under conditions which are for them more usual than those of Lake Valley, we later cut down a vigorous young tree growing on a rocky ledge in Glen Alpine, near Lily Lake, and brought a section of the trunk to Berkeley, where it is now in the Herbarium of the University. This tree is—

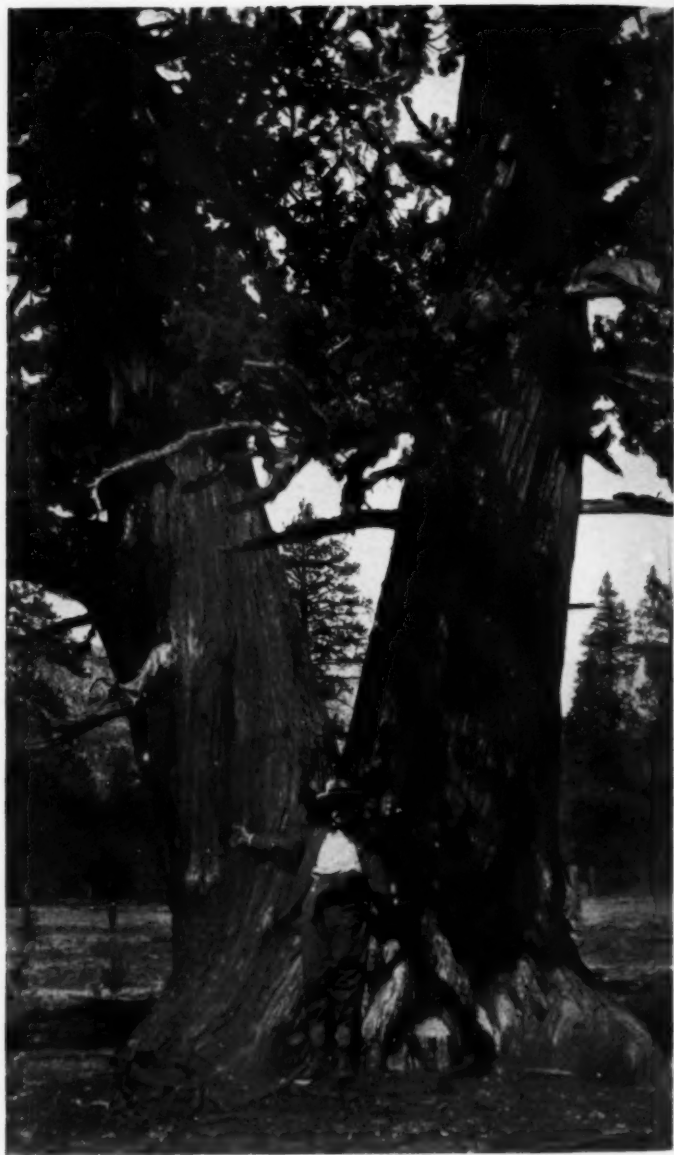
No. 5. Diameters, 14 and 18 inches. Rings, 230.†

This last tree from the mountain side proved to be a very instructive parallel to those selected as typical of growth on the valley floor. For while the age was nearly the same throughout the whole group, the measured diameters of the valley trees averaged nearly twice as great as that of the mountain tree. All this was interesting and suggestive, but it did not go far enough. We need to know also the age of the much larger trees which are frequently encountered—from five to seven feet, as stated in the *Silva*; and trees considerably larger than that have been credibly reported. Direct and conclusive answer to this question can, of course, be had only by felling

† The upper surface was chosen for measurement because it was clear of the swell about the roots. The count of rings could not be made on this surface because of a cavity at the heart. It was therefore made on the lower surface, and showed 234 rings. An allowance of 4 rings was then made for the difference of 13 inches in height.



YOUNG JUNIPER, GLEN ALPINE  
Photo by Harold C. Bradley



BIG TWIN JUNIPER  
Photo by Harold C. Bradley

some of these great trunks and making an actual count of the rings. This, however, it was impossible to do in what remained of the vacation.

Nevertheless it seemed that the data already secured should furnish sufficient basis for a good approximation to the answer desired. Of course no simple scheme of proportionate increase as between age and diameter would avail, since age increases regularly by addition of equal increments; whereas increase of diameter is by unequal increments, greatest at a point very early in the life of the tree, and diminishing thereafter to the end. The Glen Alpine tree, for example, could not by any possibility have doubled its diameter of 16 inches in twice its 230 years of age. Still less could it have doubled that again to 64 inches at 920 years of age. Yet this last diameter—by no means extraordinary among mountain junipers—could hardly have been reached short of 1400 or 1500 years!

Thus there was opened up for these trees a vista of life unexpectedly long, equalling perhaps even that of the giant sequoias. My thoughts turned at once to a study made many years ago of a magnificent specimen of that race in the Calaveras Grove, felled while in full vigor of growth at the age of 1240 years. By careful count and measurement I secured a complete record of its growth through the four centuries of its youth and the eight centuries and more of its glorious prime.

Here then was the clue I needed. With those ages and measurements<sup>§</sup> as coördinates, was plotted the curve of growth actually made by that tree throughout its entire life.\*\*

It is No. 1 of the accompanying chart, and it is to serve as a norm of growth with which we may compare, and thus forecast, the growth of other long-lived trees of kindred stock and similar figure, growing in the same climate and in the same re-

<sup>§</sup> The measurement for each 200-year period was as follows:

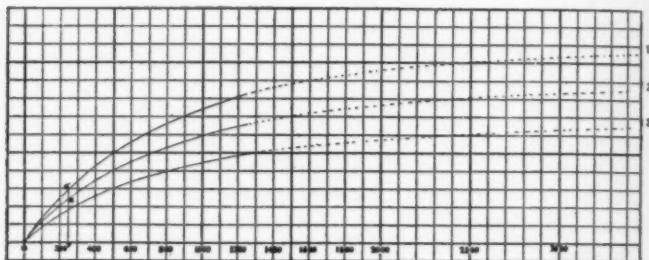
Years	Radius measurement	Years	Radius measurement
200	25 inches	800	66 inches
400	43 "	1000	74 "
600	56 "	1200	81 "

The measurements presently to be used in plotting the growth of the junipers are diameter-measurements. This is done merely to facilitate comparison of the different curves by bringing them nearer together, and does not at all affect the conclusions reached concerning the growth of the junipers. Should the diameter of the sequoia be needed, it may, of course, be had by simply doubling these measurements.

\*\* Since the curve is quite regular, it has been possible to continue it in dotted line, with little risk of error, beyond the actual life-time of the tree to the 3000-year mark. The curves of the junipers have been carried out on the same plan.



gion—namely, these junipers. Barring extraordinary accidents, the curve of their growth should be essentially like that of the sequoia, having the same time-scale, and differing only in the scale of magnitude—that is, the ordinates of the juniper curve should at all points be proportional to those of the sequoia curve. The problem is therefore to find the constant ratio between the two.



Turning now to the first juniper of the above list, we see that the initial point of its curve must of course be at zero of the century scale. A second point is also known, determined by its age of 247 years (at P) and its diameter of 24 inches ( $P_a$ ). By continuing the vertical coördinate  $P_a$  to the sequoia curve at  $d$ , we get the ordinate of that curve at the 247-year point  $P'_a$ ,—that is, the radius-measurement of the sequoia at that age,  $29.5 \frac{P_a}{P'_a}$  or 0.8 is therefore the ratio sought. Applying this ratio in succession to each of the 200-year measurements of the sequoia growth, we shall have the corresponding measurements of our juniper according to our forecast, which, when plotted, give us curve No. 2 of the chart. In like manner the age and measurements of the Glen Alpine tree result in curve No. 3 of the chart.

The scheme assumes that by the time such a tree as these has reached the age, say of 250 years, it has struck its true pace—has found its proper scale of growth. Forecasting on this basis the “expectation of growth” for these two trees, we find that the mountain juniper might attain the five feet of diameter assigned to its class at about the age of 1300 years, and the valley juniper the seven feet assigned to its class at about 1500. The forecast is probably a little too favorable for the junipers

which occupy exposed positions on the mountain ridges. For the sequoia-record which serves as the basis of the forecast is that of a tree uncommonly well defended from the accidents and stresses which sap the strength and check the growth of middle and later life. Serious damage by fire it seems to have escaped altogether. The deadly freezing and drying winds of winter which the junipers must face singly as they stand scattered about on the storm-beaten heights, could not harm this sequoia deep in its narrow dell and girt about by its giant brethren. So far then as this consideration has weight, it points to a date still later than that just now named for the attainment of its supposed maximum size.

There is also another consideration which seems to point in the same direction. The largest junipers that I have chanced upon have always been found far up on the mountain flanks. Their curve of growth therefore should be represented not by curve No. 2, but by the more pinched and starved No. 3. I feel sure that I have seen among them trees of more than seven feet in diameter, but never having had the wit to measure them, I cannot insist upon that.—Let their maximum be seven feet in diameter. According to curve No. 3 how old should they be? One actually hesitates to name the figure.

On the other hand, the enormous age which used to be claimed for the giant sequoias has been steadily cut down by the increase of definite knowledge, until now it appears that the greatest age demonstrated by actual counts is no more than 2200 or 2300 years. It would seem then that the juniper is actually in the race of life alongside of its big brother the sequoia!

May 16, 1917

## STUDIES IN THE SIERRA

By JOHN MUIR

### NO. IV. GLACIAL DENUDATION

GLACIAL denudation is one of the noblest and simplest manifestations of sun-power. Ocean water is lifted in vapor, crystallized into snow, and sown broadcast upon the mountains. Thaw and frost, combined with the pressure of its own weight, change it to ice, which, although in appearance about as hard and inflexible as glass, immediately begins to flow back toward the sea whence it came, and at a rate of motion about equal to that of the hour-hand of a watch.

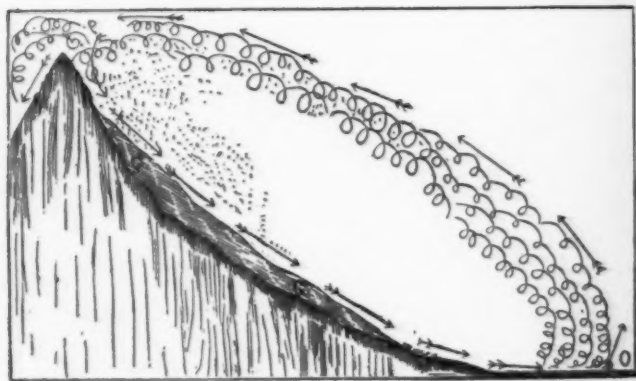


FIG. 1.

This arrangement is illustrated in Fig. 1, wherein a wheel, constructed of water, vapor, snow, and ice, and as irregular in shape as in motion, is being sun-whirled against a mountain-side with a mechanical wearing action like that of an ordinary grindstone.

In north Greenland, Nova Zembla, the arctic regions of Southeastern Alaska and Norway, the snow supply and general climatic conditions are such that their glaciers discharge di-



OLD JUNIPER, OVER TEN FEET AT BASE

On Tamarack Trail, Ralston Peak in distance

Photo by Harold C. Bradley



GIANT JUNIPER IN CATHEDRAL CAÑON, YOSEMITE  
NATIONAL PARK

Photo by William E. Colby

rectly into the sea, and so perhaps did all first-class glaciers when in their prime; but now the world is so warm, and the snow-crop so scanty, most glaciers melt long before reaching the ocean. Schlagenweit tells us those of Switzerland melt on the average at an elevation of about 7400 feet above sea-level; the Himalaya glacier, in which the Ganges takes its rise, does not descend below 12,914 feet;\* while those of our Sierra melt at an average elevation of about 11,000 feet. In its progress down a mountain-side a glacier follows the directions of greatest declivity, a law subject to very important modifications in its general application. Subordinate ranges many hundred feet in height are frequently overswept smoothly and gracefully without any visible manifestations of power. Thus, the Tenaya outlet of the ancient Tuolumne *mer de glace* glided over the Merced divide, which is more than 500 feet high, impelled by the force of that portion of the glacier which was descending the higher slopes of Mounts Dana, Gibbs, and others, at a distance of ten miles.

*The deeper and broader the glacier, the greater the horizontal distance over which the impelling force may be transmitted.* No matter how much the courses of glaciers are obstructed by inequalities of surface, such as ridges and cañons, if they are deep enough and wide enough, and the general declivity be sufficient, they will flow smoothly over them all just as calm water-streams flow over the stones and wrinkles of their channels.

PRESENT CONDITION OF THE SIERRA CONSIDERED WITH  
REFERENCE TO GLACIAL ACTION

The most obvious glacial phenomena presented in the Sierra are: first, polished, striated, scratched, and grooved surfaces, produced by the glaciers slipping over and past the rocks in their pathways. Secondly, moraines, or accumulations of mud, dust, sand, gravel, and blocks of various dimensions, deposited by the glaciers in their progress, in certain specific methods. Thirdly, sculpture in general, as seen in cañons, lake-basins, hills, ridges, and separate rocks, whose forms, trends, distribution, etc., are the peculiar offspring of glaciers.

\* According to Captain Hodgson.

In order that my readers may have clear conceptions of the distribution and comparative abundance of the above phenomena, I will give here a section of the west flank from summit to base between the Tuolumne and Merced rivers, which, though only a rough approximation, is sufficiently accurate for our purposes. The summit region from D to C (Fig. 2) is composed of metamorphic slates, so also is most of the lower region, B to A. The middle region is granite, with the exception of a few small slate-cappings upon summits of the Merced

and Hoffmann spurs. With regard to the general topography of the section, which may be taken as fairly characteristic of the greater portion of the range, the summit forms are *sharp and angular*, because they have been *down-flowed*; all the middle and lower regions comprising the bulk of the range have *rounded forms*, because

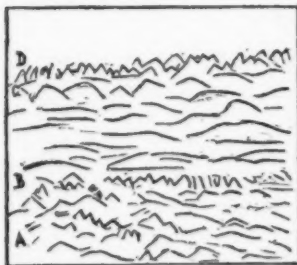


FIG. 2.

they have been *overflowed*. In the summit region all the glacial phenomena mentioned above are found in a fresh condition, simply on account of their youthfulness and the strong, indestructible character of the granite. Scores of small glaciers still exist on the summit peaks where we can watch their actions. But the middle region is the most interesting, because, though older, it contains all the phenomena, on a far grander scale, on account of the superior physical structure of granite for the reception of enduring glacial history.

Notwithstanding the grandeur of the cañons and moraines of this region, with their glorious adornments, stretching in sublime simplicity delicately compliant to glacial law, and the endless variety of picturesque rocks rising in beautiful groups out of the dark forests, by far the most striking of all the ice phenomena presented to the ordinary observer are the polished surfaces, the beauty and mechanical excellence of which no words will describe. They occur in large irregular patches many acres in extent in the summit and upper half of the middle regions, bright and stainless as the untrodden sky. They



reflect the sunbeams like glass, and though they have been subjected to the corroding influences of the storms of countless thousands of years, to frosts, rains, dews, yet are they in many places unblurred, undimmed, as if finished but yesterday. The attention of the mountaineer is seldom arrested by moraines however conspicuously regular and artificial in form, or by cañons however deep, or rocks however noble, but he stoops and rubs his hand admiringly on these shining surfaces, and tries hard to account for their mysterious smoothness. He has beheld the summit snows descending in booming avalanches, but he concludes that these cannot be the work of snow, because he finds it far beyond the reach of avalanches; neither can water be the agent, he says, for he finds it on the tops of the loftiest domes. Only the winds seem capable of following and flowing in the paths indicated by the scratches and grooves, and some observers have actually ascribed the phenomenon to this cause. Even horses and dogs gaze wonderingly at the strange brightness of the ground, and smell it, and place their feet upon it cautiously; only the wild mountain sheep seems to move wholly at ease upon these glistening pavements.

This polish is produced by glaciers slipping with enormous pressure over hard, close-grained slates or granite. The fine striations, so small as to be scarcely visible, are evidently caused by grains of sand imbedded in the bottom of the ice; the scratches and smaller grooves, by stones with sharp graving edges. Scratches are therefore most abundant and roughest in the region of metamorphic slates, which break up by the force of the overflowing currents into blocks with hard cutting angles, and gradually disappear where these graving tools have been pushed so far as to have had their edges worn off.

The most extensive areas of polished surfaces are found in the upper half of the middle region, *where the granite is most solid in structure and contains the greatest quantity of silex*. They are always brighter, and extend farther down from the axis of the range, on the *north sides* of cañons that trend in a westerly direction than on the south sides; because, when wetted by corroding rains and snows, they are sooner dried, the north sides receiving sunshine, while the south walls are mostly in shadow and remain longer wet, and of course their gla-

ciated surfaces become corroded sooner. The lowest patches are found at elevations of from 3000 to 5000 feet above the sea, and thirty to forty miles below the summits, on the sunniest and most enduring portions of vertical walls, protected from the drip and friction of water and snow by the form of the walls above them, and on hard swelling bosses on the bottom of wide cañons, protected and kept dry by broad boulders with overhanging eaves.

#### MORAINES

In the summit region we may watch the process of the formation of moraines of every kind among the small glaciers still lingering there. The material of which they are composed has been so recently quarried from the adjacent mountains that they are still plantless, and have a raw, unsettled appearance, as if newly dumped, like the stone and gravel of railroad embankments. The moraines belonging to the ancient glaciers are covered with forests, and extend with a greater or less degree of regularity down across the middle zone, as we have seen in Study No. III. Glacial rock forms occur throughout this region also, in marvelous richness, variety, and magnitude, composing all that is most special in Sierra scenery. So also do cañons, ridges and sculpture phenomena in general, descriptions of whose scenic beauties and separate points of scientific interest would require volumes. In the lower regions the polished surfaces, as far as my observations have reached, are wholly wanting. So also are moraines, though the material which once composed them is found scattered, washed, crumbled, and reformed, over and over again, along river-sides and over every flat, and filled-up lake-basin, but so changed in position, form of deposit, and mechanical condition, that unless we begin with the undisturbed moraines of the summit region and trace them carefully to where they become more and more obscure, we would be inclined to question the glacial character of these ancient deposits.

The cañons themselves, the valleys, ridges, and the large rock masses are the most unalterable and indestructible glacial phenomena under consideration, *for their general forms, trends, and geographical position are specifically glacial.* Yet even

these are so considerably obscured by post-glacial erosion, and by a growth of forests, underbrush, and weeds, that only the patient and educated eye will be able to recognize them beneath so many veils.

The ice-sheet of the glacial period, like an immense sponge, wiped the Sierra bare of all pre-glacial surface inscriptions, and wrote its own history upon the ample page. We may read the letter-pages of friends when written over and over, if we are intimately acquainted with their handwriting, and under the same conditions we may read Nature's writings on the stone pages of the mountains. Glacial history upon the summit of the Sierra page is clear, and the farther we descend, the more we find its inscriptions crossed and recrossed with the records of other agents. Dews have dimmed it, torrents have scrawled it here and there, and the earthquake and avalanche have covered and erased many a delicate line. Groves and meadows, forests and fields, darken and confuse its more enduring characters along the bottom, until only the laborious student can decipher even the most emphasized passages of the original manuscript.

#### METHODS OF GLACIAL DENUDATION

All geologists recognize the fact that glaciers wear away the rocks over which they move, but great vagueness prevails as to the size of the fragments, their abundance, and the way in which the glacial energy expends itself in detaching and carrying them away. And, if possible, still greater vagueness prevails as to the forms of the rocks and valleys resulting from erosion. This is not to be wondered at when we consider how recently glacial history has been studied, and how profound the silence and darkness under which glaciers prosecute their works.

In this article I can do little more for my readers than indicate methods of study, and results which may be obtained by those who desire to study the phenomena for themselves. In the first place, we may go to the glaciers themselves and learn what we can of their weight, motions, and general activities\*—

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\* Here I would refer my readers to the excellent elementary works of Agassiz, Tyndall and Forbes.

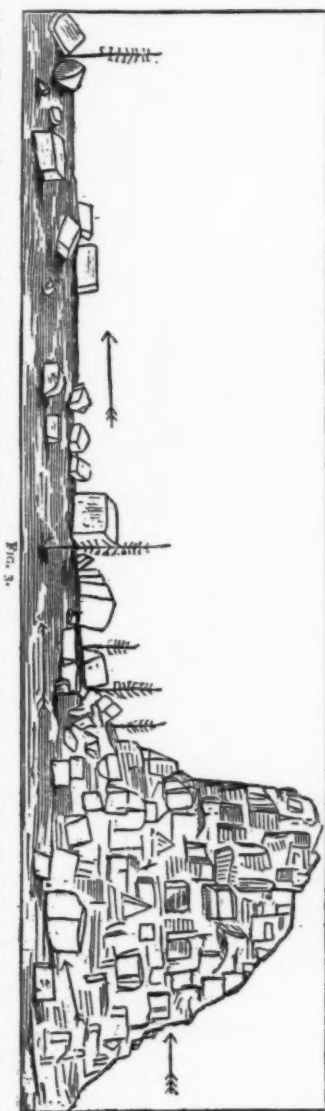
how they detach, transport, and accumulate rocks from various sources. Secondly, we may follow in the tracks of the ancient glaciers, and study their denuding power from the forms of their channels, and from the fragments composing the moraines, and the condition of the surfaces from which they were derived, and whether these fragments were rubbed off, split off, or broken off.

The waters which rush out from beneath all glaciers are turbid, and if we follow them to their resting-places in pools we shall find them depositing fine mud, which, when rubbed between the thumb and finger, is smooth as flour. This mud is ground off from the bed of the glacier by a smooth, slipping motion accompanied with immense pressure, giving rise to the polished surfaces we have already noticed. These mud particles are the smallest chips which glaciers make in the degradation of mountains.

Toward the end of the summer, when the winter snows are melted, particles of dust and sand are seen scattered over the surfaces of the Sierra glaciers in considerable quantities, together with angular masses of rock derived from the shattered storm-beaten cliffs that tower above their heads. The separation of these masses, which vary greatly in size, is due only in part to the action of the glacier, although they all are borne down like drift on the surface of a river and deposited together in moraines. The winds scatter down most of the sand and dust. Some of the larger fragments are set free by the action of frost, rains, and general weathering agencies; while considerable quantities are borne down in avalanches of snow, and hurled down by the shocks of earthquakes. Yet the glacier performs an important part in the production of these superficial effects, by undermining the cliffs whence the fragments fall. During my Sierra explorations in the summers of 1872 and 1873, almost every glacier I visited offered illustrations of the special action of earthquakes in this connection, the earthquake of March, 1872, having just finished shaking the region with considerable violence, leaving the rocks which it hurled upon the ice fresh and nearly unchanged in position.

But in all moraines we find stones, which, from their shape and composition, and the finish of their surfaces, we know

were not thus derived from the summit peaks overtopping the glaciers, but from the rocks *past* which and *over* which they flowed. I have seen the north Mount Ritter Glacier and many of the glaciers of Alaska in the act of grinding the side of their channels, and breaking off fragments and rounding their angles by crushing and rolling them between the wall and ice. In all the pathways of the ancient glaciers, also, there remain noble illustrations of the power of ice, not only in wearing away the sides of their channels in the form of mud, but in breaking them up into huge blocks. Explorers into the upper portion of the middle granite region will frequently come upon blocks of great size and regularity of form, possessing some character of color or composition which enables them to follow back on their trail and discover the rock or mountain-side from which they were torn. The size of the blocks, their abundance along the line of dispersal, and the probable rate of motion of the glacier which quarried and transported them, form data by which some approximation to the rate of this sort of denudation may be



reached. Fig. 3 is a rock about two miles west of Lake Tenaya, with a train of boulders derived from it. The boulders are scattered along a level ridge, where they have not been disturbed in any appreciable degree since they came to rest toward the close of the glacial period. An examination of the rock proves conclusively that not only were these blocks—many of which are twelve feet in diameter—derived from it, but that they were *torn off its side* by the direct mechanical action of the glacier that swept over and past it. For had they simply fallen upon the surface of the glacier from above, then the rock would present a crumbling, ruinous condition—which it does not—and a talus of similar blocks would have accumulated at its base after there was no glacier to remove them as they fell; but no such talus exists, the rock remaining compact, as if it had scarcely felt the touch of a single storm. Yet, what countless seasons of weathering, combined with earthquake violence, could not accomplish, was done by the Tenaya Glacier, as it swept *past* on its way to Yosemite.

A still more striking and instructive example of side-rock erosion may be found about a mile north of Lake Tenaya. Here the glaciated pavements are more perfectly preserved than elsewhere in the Merced basin. Upon them I found a train of granite blocks, which attracted my attention from their isolated position, and the uniformity of their mechanical characters. Their angles were unworn, indicating that their source could not be far off. It proved to be on the *side* of one of the lofty elongated ridges stretching toward the Big Tuolumne Meadows. They had been quarried from the *base* of the ridge, which is ice-polished and undecayed to the summit. The reason that only this particular portion of the ridge afforded blocks of this kind, and so abundantly as to be readily traceable, is that the cleavage planes here separated the rock into parallelepipeds which sloped forward obliquely into the side of the glacier, which was thus enabled to grasp them and strip them off, just as the spikelets of an ear of wheat are stripped off by running the fingers down from the top toward the base. An instance where the structure has an exactly opposite effect upon the erodibility of the side of a rock is given in Fig. 4, where the cleavage planes separate it into slabs which overlap

each other with reference to the direction of the glacier's motion, like the shingles of a roof. Portions of the sides of rocks or cañon walls whose structure is of the latter character always project, because of the greater resistance they have been able to offer to the action of the past-flowing glacier, while those portions whose structure is similar to that of the former example always recede.

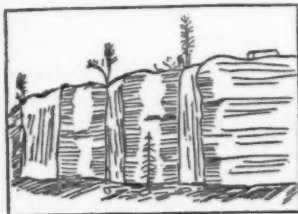


FIG. 4.



FIG. 6.

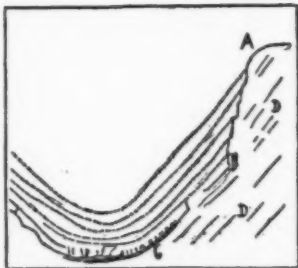


FIG. 5.



FIG. 7.

Fig. 5 is a profile view of a past-flowed glacier rock, about 1500 feet high, forming part of the north wall of Little Yosemite Valley near the head. Its grooved, polished, and fractured surface bears witness in unmistakable terms to the enormous pressure it has sustained from that portion of the great South Lyell Glacier which forced its way down through the valley, and to the quantity, and size, and kind of fragments which have been removed from it as a necessary result of this action. The dotted lines give an approximate reconstruction of the rock as far as to the outside layer at A. Between A and B the broken ends of concentric layers, of which the whole rock seems to be built, give some idea of the immense size of



some of the chips. The reason for the greater steepness of the front from A to B than from B to C will be perceived at a glance; and, since the cleavage planes and other controlling elements in its structure are evidently the same throughout the greater portion of its mass as those which determined its present condition, if the glacial winter had continued longer its more characteristic features would probably have remained essentially the same until the rock was nearly destroyed.

The section given in Fig. 6 is also taken from the north side of the same valley. It is inclined at an angle of about twenty-two degrees, and therefore has been more flowed *over* than flowed *past*. The whole surface, excepting the vertical portion at A, which is forty feet high, is polished and striated. The arrows indicate the direction of the striae. At A a few incipient cleavage planes are beginning to appear, which show the sizes of some of the chips which the glacier would have broken or split off had it continued longer at work. The whole of the missing layer which covered the rock at B, was evidently detached and carried off in this way. The abrupt transition from the polished surface to the split angular front at A, shows in a most unequivocal manner that glaciers erode rocks in at least two very different modes—first, by grinding them into mud; second, by breaking and splitting them into blocks, whose sizes are measured by the divisional planes they possess and the intensity and direction of application of the force brought to bear upon them. That these methods prevail in the denudation of *overflowed* as well as *past-flowed* rocks, is shown by the condition of every cañon of the region. For if mud particles only were detached, then all the bottoms would be smooth grooves, interrupted only by flowing undulations; but, instead of this condition, we find that every cañon bottom abounds in steps sheer-fronted and angular, and some of them hundreds of feet in height, though ordinarily from one to ten or twelve feet. These step-fronts in most cases measure the size of the chips of erosion as to depth. Many of these interesting ice-chips may be seen in their tracks removed to great distances or only a few feet, when the melting of the glaciers at the close of the period put a stop to their farther progress, leaving them as lessons of the simplest kind.

Fig. 7, taken from the Hoffmann fork of Yosemite Creek basin, shows the character of some of these steps. This one is fifteen feet high at the highest place, and the surface, both at top and bottom, is ice-polished, indicating that no disturbing force has interfered with the phenomena since the termination of the glacial period.



FIG. 8.

Fig. 8 is a dome on the upper San Joaquin, the top of which is about 7700 feet above sea-level. The arrow indicates the direction of application of the ice-force, which is seen to coincide with the position of remaining fragments of layers, the complements of which have been eroded away. Similar fragments occur on the stricken side of all domes whose structure and position were favorable for their formation and preservation.

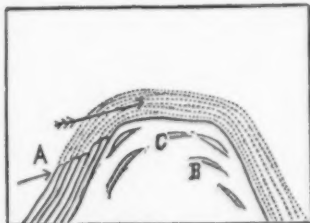


FIG. 9.

Fig. 9 is a fragmentary dome situated on the south side of the Mono trail, near the base of Mount Hoffmann. Remnants of concentric shells of granite from five to ten feet thick are seen on the up-stream side at A, where it received the thrust of the Hoffmann Glacier, when on its way to join the Tenaya, above Mirror Lake. The edges of unremoved layers are visible at B and C. This rock is an admirable illustra-

tion of the manner in which a broad deep glacier *clasps* and denudes a dome. When we narrowly inspect it, and trace the striae, we perceive that it has been eroded at once in front, back and sides, and none of the fragments thus removed are to be found around its base. Here I would direct special attention to the fact that it is on the upper side of this rock at A, *just where the pressure was greatest, that the erosion has been least*, because there the layers were pressed against one another, instead of away from one another, as on the sides and back, and could not, therefore, be so easily broken up.

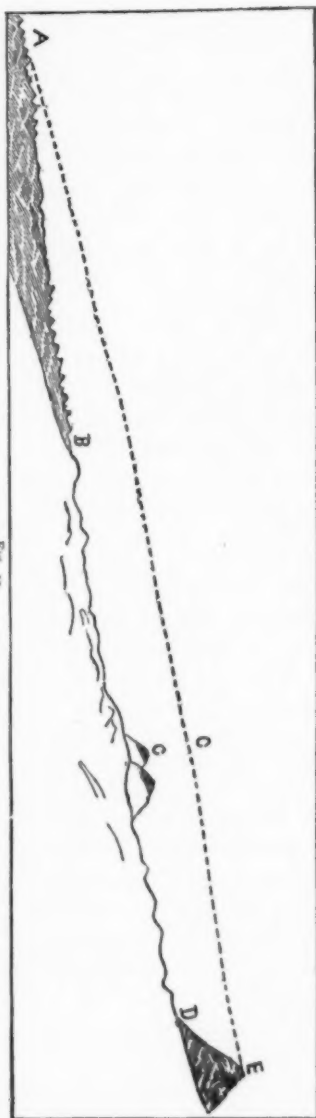
#### QUANTITY OF GLACIAL DENUDATION

These simple observations we have been making plainly indicate that the Sierra, from summit to base, was covered by a sheet of crawling ice, as it is now covered by the atmosphere. Its crushing currents slid over the highest domes, as well as along the deepest cañons, wearing, breaking, and degrading every portion of the surface, however resisting. The question, therefore, arises, What is the quantity of this degradation? As far as its limit is concerned it is clear that, inasmuch as glaciers can not move without in some way and at some rate lowering the surfaces they are in contact with, a mountain range *may* be denuded until the declivity becomes so slight that the glaciers come to rest, or are melted, as was the case with those concerned in the degradation of the Sierra. However slow the rate of wear, given a sufficient length of time, and any thickness of rock, whether a foot or hundreds of thousands of feet, will be removed. No student pretends to give an arithmetical expression to the glacial epoch, though it is universally admitted that it extended through thousands or millions of years. Nevertheless, geologists are found who can neither give Nature time enough for her larger operations, or for the erosion of a mere cañon furrow, without resorting to sensational cataclysms for an explanation of the phenomena.

If the Sierra were built of one kind of rock, homogeneous in structure throughout its sections, then perhaps we would be unable to produce any plain evidence relative to the amount of denudation effected; but, fortunately for the geologist, this is not the case. The summits of the

range in the section under special consideration are capped with slates; so are several peaks of outlying spurs, as those of the Merced and Hoffmann, and all the base is slate-covered. The circumstances connected with their occurrence in these localities and absence in others, furnish proof little short of demonstration that they once covered all the range, and, from their known thickness in the places where they occur, we may approximate to the quantity removed where they are less abundant or wanting. Moreover, we have seen in Study No. III that the physical structure of granite is such that we may know whether or not its forms are broken. The opposite sides of valley walls exhibiting similar fragmentary sections often demonstrate that the valleys were formed by the removal of an amount of rock equal in depth to that of the valleys.

Fig. 10 is an ideal section across the range from base to summit. That slates covered the whole granitic region between B and D is shown by the fact that slates cap the summits of spurs in the denuded gap where they are sufficiently high, as at C. Also,



where the granite comes in contact with the slates, and for a considerable depth beneath the line of contact, it partakes, in a greater or less degree, of the physical structure of slates, enabling us to determine the fact that in many places slates *have* covered the granite where none are now visible for miles, and also furnishing data by which to approximate the depth at which these surfaces lie beneath the original summit of the granite. Phenomena relating to this portion of the argument abound in the upper basins of the tributary streams of the Tuolumne and Merced; for their presentation, however, in detail, we have no space in these brief outlines.

If, therefore, we would restore this section of the range to its unglaciated condition, we would have, first, to fill up all the valleys and cañons. Secondly, all the granite domes and peaks would have to be buried until the surface reached the level of the line of contact with the slates. Thirdly, in the yet grander restoration of the missing portions of both granite and slates up the line between the summit slates and those of the base, as indicated in Fig. 10 by the dotted line, the maximum thickness of the restored rocks in the middle region would not be less than a mile and a half, and average a mile. But, because the summit peaks are only *sharp residual fragments*, and the foot-hills *rounded residual fragments*, when all the intervening region is restored up to the dotted line in the figure, we still have only partially reconstructed the range, for the summits may have towered many thousands of feet above their present heights. And when we consider that residual glaciers are still engaged in lowering the summits which are already worn to mere blades and pinnacles, it will not seem improbable that the whole quantity of glacial denudation in the middle region of the western flank of the Sierra considerably exceeds a mile in average depth. So great was the amount of chipping required to bring out the present architecture of the Sierra.

Reprinted from the *Overland Monthly* of August, 1874. This is the fourth of a series of seven studies in which Mr. Muir developed his theories of the geology of the Sierra.—EDITOR.

# SIERRA CLUB

Founded 1892

402 MILLS BUILDING, SAN FRANCISCO, CALIFORNIA

Annual Dues: \$3.00, (first year \$5.00)

## THE PURPOSES OF THE CLUB ARE:

*To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.*

JOHN MUIR, President 1892 to 1914

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## SIERRA CLUB BULLETIN

*Published annually for the members*

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K. A. RYERSON  
E. L. STOCKING, 18th Railway Engineers, A. E. F., France  
J. C. TORMEY  
GEORGE W. WHITE, 14th Field Artillery  
TYLER R. VAN DEGRIFT, 1st Sergeant 7th Battery

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U. S. Marine Corps, Mineola, L. I.  
WILLIAM T. GOLDSBOROUGH, 1st Lieutenant, 138th Aero Squadron  
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United States Navy

L. E. BRUCE, Ordnance Officer

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Cost Inspection, Union Iron Works, San Francisco

S. M. HASLETT, JR., Ensign, U. S. Naval Academy, Annapolis

HOMER T. MILLER, Assistant Paymaster (Ensign), Twelfth Naval  
District, San Francisco

The lists given above are doubtless incomplete and members are urged to send in corrections and additions. Mention should also be made of many of our members who are giving volunteer service in important fields of civilian war work. Our vice-president, Vernon Kellogg, formerly associated with Mr. Hoover on the Commission for Relief in Belgium, is now his assistant in the Food Administration. With him also are Duncan McDuffie and J. S. Drum. Warren Gregory is another member of the C. R. B. who has done notable work. Warren Olney, Jr., is a member of the State Bureau of Military Registration, and Walter J. Burpee, a member of the Local Exemption Board. W. J. Aschenbrenner is an associate member of the Legal Advisory Board. Homer P. Earle is in Government service in Washington.

From the University of California the following members of the faculty have been engaged in investigation for the Pacific Coast Research Conference: W. C. Bray, J. S. Burd, Herman Kower, A. C. Lawson, W. A. Setchell, Max Thelan. For the State Council of Defense: H. R. Hatfield, W. L. Jepson, C. A. Kofoid, E. P. Lewis, G. L. Louderback, Walter Mulford.

The Reverend A. W. Palmer is a Director General of religious work in the Y. M. C. A. Charles J. O'Connor is at the head of Civilian Relief of the Red Cross for the whole Pacific Coast. Other devoted workers in the Red Cross are Ellen Emerson, John Gardner, D. L. Beard, Mary Haskell, Jane M. Spalding, Agnes Vaille and Jessie Tatlock. Miss Willie Morrow and Grace Beans are on their way to France as nurses. Mrs. Eunice Tietjens and Elizabeth Hammond are both in France, the former correspondent for the *Chicago Daily News*, the latter as interpreter and entertainer in a Red Cross Unit. Edith Bull is likewise in France on war service. Professor Charles A. Huston of Stanford University and Professor Edward C. Franklin are both on the War Trade Board, Mr. Huston on the Control of Exports, and Mr. Franklin on the Control of Mines.

A few names likewise come to mind of friends from former outings not now members of the club, news of whom may be of interest to many. Bernard Miller is a Captain in the Army; Dr. Henry Forbes is in France with one of the American base hospitals, "loaned to the British"; he has served in Serbia also. Aristides Phoutrides is First Lieutenant of Infantry, U. S. A. Alice Leavens is a member of the Smith College group engaged in rebuilding ruined villages in France. Dr. Sterling Bunnell is also in France.

## EDITORIALS



**SHALL SHEEP DESPOIL NATIONAL PARKS?\*** Powerful influence will be brought to bear this winter in an effort to have the national parks thrown open to sheep grazing. War pressure and the necessity for additional mutton and wool will be urged as the excuse for this additional entering wedge. But if these natural wonderlands are ever again invaded by the "hoofed locusts," the fable of the camel and the Arab's tent will be repeated. Once allowed to enter, these destructive agencies will hold on like grim death, even when the asserted need is over. It took the courage and foresight of a John Muir and years of effort to "drive these money changers out of the temple," and no man was ever better qualified to judge the damage these wandering hordes did to the wild gardens of the Sierra and other mountain parklands. He accompanied a band of sheep on his first trip into the Sierra, and in all his wanderings was impressed with the desert-like destruction they left in their wake. To use his own words:

In the summer of 1889, I took one of the editors of the *Century Magazine* out for a walk in Yosemite . . . and when we were camped one day at the Big Tuolumne Meadows, my friend said, "Where are all these wonderful gardens you wrote so much about?" And I had to confess—woe's me—that uncountable sheep had eaten and trampled them out of existence.

The axe is not yet at the root of every tree, but the sheep is, or was before the national parks were established . . . the sheep consume every green leaf, not sparing even the young conifers, when they are in a starving condition from crowding, and they rake and dibble the loose soil of the mountain sides for the spring floods to wash away, and thus at last leave the ground barren.

And to think that the sheep should be allowed in these lily meadows! after how many centuries of Nature's care planting and watering them, tucking the bulbs in snugly below the winter frost, shading the tender shoots with clouds drawn above them like curtains, pouring refreshing rain, making them perfect in beauty, and keeping them safe by a thousand miracles. . . .

A few years later he wrote:

On this ramble I was careful to note the results of the protection the region had enjoyed as a park under the care of the Federal Government. . . . When I had last seen the Yosemite National Park region, the face of the landscape in general was broken and wasted, like a beautiful human countenance destroyed by some dreadful disease. Now it is blooming again as one general garden, in which beauty for ashes has been granted in fine wild measure. . . .

\* The National Park Service has opened the parks to a limited number of cattle. While the necessity for even this is to be regretted, no permanent harm can result if the numbers are restricted, for cattle are not nearly so destructive to vegetation as sheep.

This is no time to take advantage of a nation's stress and urge the granting of an unnecessary destructive privilege which will injure her at home as well as abroad. After the war is over the need of national parks will be greater than ever to help heal the wounds and allay the suffering of the war. Our parks should then be at their best and should not needlessly show the blasting effects of modern warfare. Every loyal American should be willing to sacrifice anything and everything vitally essential to victory, but we should not blindly sacrifice priceless possessions to our everlasting regret until the need for such sacrifice becomes compelling. The national parks are only a small fractional area of the public domain.

The French, who have superbly suffered the heaviest burdens in this war, are keeping the gardens of Paris blooming in all their peace-time glory in order to cheer the wounded and downhearted and make them forget for the moment their misery. Why does not France spend this labor in making shells or raising wool? Why not auction off the priceless art treasures of the Louvre if money and material gain is the only consideration in this war? No, the world is not coming to an end and there is a brighter day to look forward to, be it near or be it remote. And when that day arrives, let us not still be confronted with the terrible ravages of war by the sight of needless destruction of our wild playgrounds at home.

W. E. C.

**TO OUR CLUB MEMBERS** There is a natural tendency in these days to relinquish the privileges of club membership for financial reasons.

The cost of living has risen and taxes of all kinds are greatly increased. Consequently the loyalty of all who belong to public-spirited organizations is undergoing a test. Many bear testimony that the Sierra Club makes a better return for value received than any other club of the kind. But we ardently hope to build up a membership that will not rate the question of individual benefit above the honor of sharing in the valuable public service which the Sierra Club is constantly rendering. Had it not been for the watchful protection which the club has exercised over the national parks and monuments of California, in particular, both present and future generations would long ago have been robbed of treasures of scenery that are now, and, we hope, will ever remain the pride and the inspiration of the West. In order to invade the national parks, wool and mutton men are sure to dress up their hope of private gain in the form of a public necessity. We need the support of all our members in any impending fight for the protection of our country's heritage of natural beauty. Let there be no slackers in our ranks! Maintain your membership!

W. F. B.

**TWO ARCTIC EXPEDITIONS** A time when nearly the whole world is at war offers little encouragement to the enterprise of explorers. Two notable

Arctic expeditions, however, were undertaken before the outbreak of the war. The safe return of members of both exploring parties last summer is a fact of great interest to students of the earth's surface. The Crocker Land Expedition carried a survey along the south-eastern coast of Ellesmere Island, northwest of Greenland. That these explorers found a great increase of glacial activity throughout the northern regions, since the middle of the nineteenth century, is a fact of considerable climatic importance. In one place an enormous new glacier has formed as a result of the progressive refrigeration of the country. The land is said to be fairly buried in ice, which flows over and around the headlands and fills all the fiords. In view of the fact that the seasonal cold broke all records for one hundred and nine years in New England last spring, and the further fact that this increase of cold has been noted in the temperate zone of the entire northern hemisphere, one is tempted to raise the question whether another northern ice period is approaching.

At Cape Isabella Mr. Macmillan, the leader of the expedition, was fortunate enough to find the records left by Sir George Nares of the British expedition of 1876, and mail for the *Discovery* and the *Alert* left a generation ago by Sir Allen Young of the *Pandora*. The latter vessel, renamed the *Jeannette*, was commanded by George W. De Long when he set out in 1879 from San Francisco on his fateful expedition.

The southern party of the Canadian Arctic Expedition made its way northward around Alaska to the point where the Canadian-Alaskan boundary line touches the Arctic Ocean. From there they explored the coast eastward for a thousand miles, consuming three years in the achievement of this task. Their discoveries are of great interest and importance. Among them is the cañon of the Croker River, deeply eroded from dolomite. The collections, both of plants and of animals, include specimens of groups never before encountered in the western Arctic area. The ethnologists found brand new material for study in the Copper Eskimos, whose language, folklore, and social customs were investigated by one of the anthropologists who lived and wandered about with them for half a year on the little known Victoria Island. These Eskimos make their tools of native copper, which was found there in nuggets weighing in some cases forty pounds. The geologist of the party estimated that two billion tons of the ore were in actual sight.

Reports of the discoveries made by the northern party under the direction of the noted explorer Vilhjalmur Stefansson are now being awaited eagerly. He had not been heard from for a year and a half, but the Navy Department has, just as we are going to press, received word of the safe arrival of his party at Fort Yukon. Stefansson undertook to explore the Beaufort Sea region west of the Parry Archipelago and north of Alaska and Yukon Territory.

The interests common to Alpinists and explorers of the Arctic regions receive new recognition in the fact that Mr. Macmillan has been invited to give an account of his explorations at the annual dinner of the American Alpine Club.

W. F. B.

**MOUNTAINEERS AND WAR** More than fifty of our members are now in the army or navy or in hospital service. Nearly as many again have sacrificed their business interests to devote themselves to civilian work directly related to the war. Still others, uncounted numbers of them, whose names will never appear on war-service records, are doubling already heavy burdens of work and responsibility in order that home enterprises of far-reaching importance may still be carried on.

In their mountain life mountaineers gain a democratic simplicity, a vigorous hardihood, that should stand them in good stead now. They learn there to respect discipline, to sacrifice individual desires to the good of the communal whole, to live cheerfully with little besides the three B's of mountaineering—bed, boots and bread. Indispensable knowledge this for a soldier. It is not surprising, therefore, to hear that high honor already has been paid one of our new officers. A group of drafted men training under him, given the opportunity to enter a reserve officer's training camp, declared that if they could be assured of going to France and fighting with him, they would prefer to remain in the ranks. This officer had learned, like the French officers, that leadership and comradeship may go hand in hand. We believe that when the war is over we shall be able to point with pride to more than one of our trail comrades, who in his hours of recreation amid the peace and beauty of our mountains has gained the strength, the self denial and the resourcefulness that will make him a gallant and trusted leader in the grim business of war.

M. R. P.

## REPORTS OF COMMITTEES

### REPORT OF THE TREASURER FOR THE YEAR ENDED MAY 5, 1917, CARRIED FORWARD TO DECEMBER 31, 1917

At a meeting of the Board of Directors of the Sierra Club held May 5, 1917, it was voted that the fiscal year of the club be changed to the calendar year. Among other reasons for this change was the fact that under the old system the report of the treasurer, rendered in May, could not be published until the following January. The report ended May 5, therefore, has been carried forward to December 31, and henceforward will be rendered each year upon the latter date and published in the January BULLETIN.

At an earlier meeting it was voted by the directors that the fund derived from the bequest of the late Edward Whympere (\$254.12) should be expended in reducing the debt on the Parsons Memorial Lodge situated on the Tuolumne Soda Springs property, this being a permanent improvement equally valuable to all members of the club.

#### SUMMARY OF RECEIPTS AND EXPENDITURES YEAR ENDED MAY 5, 1917

Total receipts .....	\$5,724.66
Total expenditures .....	5,566.35
Excess of receipts over expenditures.....	158.31
Cash on hand May 6, 1916.....	2,036.55
Balance May 5, 1917.....	\$2,194.86

#### RECEIPTS AND EXPENDITURES FOR NINETEEN MONTHS ENDED DECEMBER 31, 1917

MAY 6, 1916, TO DECEMBER 31, 1917

#### *Receipts*

Dues from members .....	\$7,230.00
Rent .....	210.00
Advertisements .....	475.00
Sale of BULLETINS .....	26.45
Sale of pins .....	11.00
Interest on bank accounts.....	120.44
Sundry small receipts .....	4.03
Total receipts .....	\$8,026.92

Expenditures

Rent of room 402 Mills Building.....	\$1,200.00
Salary of assistant .....	1,200.00
Circulars and printing .....	710.48
Postage .....	527.65
Telephone and telegraph .....	179.38
Office maintenance .....	98.79
Library and photographs .....	114.66
Publishing and delivering BULLETIN.....	1,925.21
Delivering <i>Appalachia</i> .....	168.22
Le Conte Lodge .....	222.88
Parsons Lodge.....	216.82
John Muir Trail .....	20.00
Southern Cal. Section .....	450.00
Furniture and Equipment.....	31.90
Dues to other clubs.....	36.24
Taxes and insurance .....	183.25
Clerical assistance .....	22.75
Debit and exchange.....	21.25
Pins .....	32.70
Reunions, etc. ....	32.10
Sundry small expenses .....	10.62
Total expenditures .....	<u>\$7,404.90</u>
Excess of receipts over expenditures.....	622.02
Cash on hand May 6, 1916 .....	<u>2,036.55</u>
Cash on hand December 31, 1917 .....	<u>\$2,658.57</u>
Made up as follows:	
In office .....	\$ 25.00
First National Bank .....	213.11
Savings Union Bank & Trust Co.....	1,671.41
Security Savings Bank .....	<u>749.05</u>
Total .....	<u>\$2,658.57</u>

Permanent Fund

Balance—May 6, 1916.....	\$1,574.92
New life members .....	400.00
Interest .....	<u>132.50</u>
Balance—December 31, 1917, in Security Savings Bank.....	<u>\$2,107.42</u>

MARION RANDALL PARSONS,  
Treasurer



## REPORT ON LE CONTE MEMORIAL LODGE

The lodge was opened to the public on May 23rd. During the first part of the season the cold and damp weather necessitated a large fire being kept constantly burning for the comfort of the guests. For this purpose a quantity of wood was donated to the lodge by the Government officials. During the early part of the season we had an average of fifteen visitors a day, but as the summer advanced the number increased until, during the latter part of June, we often had several hundred. In July the number decreased again quite materially.

The guests seemed to enjoy the books on the valley, including those on the birds and flowers, and the daily papers, more than any of the other attractions. They were also much interested in the maps and studied them diligently. On the hot days of July, they discovered that a cool, comfortable spot could always be found in the lodge, and soon took advantage of this, spending the whole afternoon within it, which made the one comfortable rocking chair constantly in demand.

We renewed many of the older specimens of the herbarium, brightening up the collection. There are many more specimens which we collected for this purpose but left unmounted on account of lack of room. A catalogue of the books was made this summer for the library, there being about 350. Two cards were made for each, so that any book may easily be found by knowing either the author or title.

We desire to express our sincere appreciation to the Sierra Club for the privilege of spending a summer in the valley as custodians of the lodge.

DOCIA I. PATCHETT,  
ROSE B. WRIGHT,

*Custodians*

J. N. LE CONTE, *Chairman*,  
R. M. PRICE,

MARION RANDALL PARSONS,  
*Committee*

## REPORT OF 1917 OUTING

Owing to conditions brought about by the war, the ambitious plans of the Outing Committee to take the club into the San Joaquin and Middle Fork of the Kings regions had to be abandoned until after the war. A substitute outing was taken into the Tuolumne Meadows, where a main camp was established on the Soda Springs property which is under the control of the club, and from this central camp trips were taken to the many surrounding points of interest. About 150 members participated and the outing proved thoroughly enjoyable from every standpoint. This was the first opportunity that members of the club have had generally to enjoy the Parsons Memorial Lodge. Every one had great praise for



UNIQUE TAMARACK PINE GROWTH  
 Located on slope below Elizabeth Lake, Tuolumne Meadows. Note the three upright trunks  
 growing from the curved portion  
 Photo by William E. Colby



ONE OF THE EXQUISITE LAKES IN TEN LAKE BASIN

Yosemite National Park

Photo by William E. Colby

its architectural beauty and its appropriateness to the surroundings. Several of the camp-fires were held in the lodge itself. The fire was built in the large fireplace and the building easily accommodated 150 at one time. Large parties climbed Mt. Lyell and Mt. Dana, and smaller expeditions went as far as Rodgers Lake and Dunderberg Peak. A small knapsack party visited the Ten Lake Basin region with a view of gaining information for the outing of 1918. The party returned to Yosemite by way of Merced Lake and Little Yosemite, many members availing themselves of the opportunity to climb Half Dome with the aid of the rope that has been placed along the dangerous portion of the ascent.

Because of the continuance of the war and the desire on the part of many to be within easy reach of telephone and rail communication, the outing for the coming summer will be taken to the same headquarters in the Tuolumne Meadows, through Yosemite, and for the last three weeks of July as was the case last year. The total expense of the outing from San Francisco for the three weeks will be in the neighborhood of \$70.00 or \$75.00 for those going from San Francisco, and approximately \$80.00 for those leaving Los Angeles. This is as close a calculation as is possible at the present time, and detailed information will be sent out during the spring as usual.

In order to make the trip as interesting as possible to those who have visited the Meadows on previous occasions, it is planned to take a side trip down to Mt. Ritter and vicinity during the first two weeks of the outing, and the entire party will be taken into Ten Lake Basin during the last week. The region about Mt. Ritter is one of the most striking and spectacular from the standpoint of mountaineering in the Sierra, while Ten Lake Basin contains one of the most exquisite groups of lakes that are to be found in the whole range. In all probability a knapsack party will go down the Tuolumne Cañon to Pate Valley and rejoin the main party in Ten Lake Basin. On account of the strenuous conditions created by the war, the committee had some thought of discontinuing the outings for the coming summer at least, but so many requests have been made that an outing be undertaken in order to afford those who have been hard at work during the year an opportunity for complete rest and recreation, that the trip as outlined above will be undertaken, but because of these conditions the committee requests that all possible assistance be rendered by giving immediate notice in writing to the club of the intention of those who desire to participate. This application will not be considered binding, but it is quite necessary in order to give the committee an opportunity to prepare for the requisite number.

Very respectfully,

WM. E. COLBY, *Chairman*,  
J. N. LE CONTE,  
CLAIR S. TAPPAAN.

## SECRETARY'S ANNUAL REPORT

MAY 6, 1916, TO MAY 5, 1917

*To the Members of the Sierra Club:*

The club can be justly proud of the work accomplished the last year. Many of its members have entered the service of the Government in one capacity or another as will be indicated in part, at least, by the roll of honor published in another portion of the BULLETIN. The club is so large that we have not been able to ascertain all of the names that should be placed on this list, and will appreciate assistance in making it complete. It is a source of pride and satisfaction to learn from many of the active members who became officers in the various training camps established by the Government that a considerable portion of their success in these training camps was attributed directly to the experience in outdoor life and ability to handle personal equipment derived while on Sierra Club trips.

The club also did a splendid work in securing passage of another bill in the last State Legislature appropriating an additional \$10,000 to be used toward the completion of the John Muir Trail. Great credit is due Senator A. H. Breed for his tremendously effective assistance in this behalf. At the suggestion of the club the Legislature also amended the Golden Trout Law so that it is now possible to catch these trout commencing the 1st of July instead of the 1st of August, as was formerly the case. This condition virtually debarred any opportunity for the club members to catch golden trout on any of their outings, and was not supported by any valid reason.

The club also entered a vigorous protest against allowing cattle to enter the national parks unless a compelling necessity were shown. Some good citizens became quite hysterical on the subject, and without adequate information were demanding that the parks be thrown open indiscriminately to grazing. Instead of a shortage of feed as predicted, there never was a better grazing year known in the Sierra than that of last summer, and the urgent demand on this score was traced directly to cattle interests that have been trying to get permits to enter the park ever since parks were established. Under pressure, the Department of the Interior did allow a limited number of cattle to enter the Yosemite National Park north of the Tuolumne River and in the region about the headwaters of the South Fork of the Merced. Even this is to be regretted, for when these interests once get a hold on the park it will be difficult to dislodge them. The Sierra Club, under the guidance of John Muir, fought for years to get the sheep and cattle out of the Yosemite Park, and while the Sierra Club would not for a moment stand in the way of a real and compelling necessity, it would be derelict in its duty if it did not do all in its power to keep the parks from being ruined as the result of a specious demand.

We are indebted to Dr. E. P. Meinecke, of the U. S. Forest Service,

for the gift of a large number of Alpine journals and publications, forming quite complete sets, many of which were bound.

The 1st of May the total membership of the club was 1951, of which number 239 were new members, making a net increase of 155 members, but there were at that time 275 delinquent members who had been dropped for non-payment of dues, and who were given another opportunity to be placed in good standing. A good many members have resigned from the club since that date because of war conditions, or been dropped for non-payment of dues, and it therefore behooves the loyal members to work actively in increasing the membership so that it may not show a considerable loss at the end of another year. While the Board of Directors has not met so as to act directly upon the matter, it is unquestionably the concensus of opinion that dues of those members who are in active service of the Government will be remitted during the period of the war.

Respectfully,

WM. E. COLBY, *Secretary*

## NOTES AND CORRESPONDENCE

Edited by WILLIAM E. COLBY



### SOUTHERN SECTION NOTES

#### FROM PINE TREES TO PALM GROVES

[An account of a four-day trip of the Sierra Club, Southern Section, through the San Jacinto Mountains to the Colorado Desert.]

There is no finer alpine region in Southern California than the San Jacinto Mountains with their extensive meadows. Rising abruptly from the western border of the Colorado Desert, at places below sea level, Mount San Jacinto reaches an altitude of 10,805 feet. The new and attractive Government "Recreation Map" of the Cleveland National Forest mentions this peak as among the most rugged of our State. Last spring, from the heights of Catalina Island, members of the Sierra Club viewed this snow-crowned peak with his brothers, San Geronimo and San Bernardino, nearly one hundred and fifty miles away, and they were eager for the ascent.

A delighted party of forty left Los Angeles the latter part of August, 1917, on a "Sierra Club Special Electric" for San Bernardino, sixty miles distant. Here they transferred to two powerful auto stages which carried them via Hemet to about a mile above the mountain resort at Idyllwild. In Strawberry Valley, amidst a friendly group of pines and incense cedars, the first night's camp was made. The party soon dispersed into prearranged commissary groups of five to seven persons each and the evening meal was prepared. At the camp-fire the interest centered about the legends of Tahquitz. This wicked Indian chief so enraged his people that they put him to death by fire, but his evil spirit escaped, and even until today it is said the Saboba Indians approach these mountains only with fear and trembling because of the mysterious rumblings around Tahquitz Peak. These rumblings were experienced by our party, but the thunder clouds overhanging the desert were held in suspicion.

Next morning breakfast was prepared at daybreak, lunches put in knapsacks, and dunnage bags left for the packers. By noon the party had ascended to Tahquitz Peak, 8826 feet in elevation. This granite mountain of vertical cleavage and rugged piles of weather-worn boulders affords a view of Hemet Lake, with the extensive areas of prosperous citrus and deciduous groves below. The trail now descends to Tahquitz Valley, with its fine forest of yellow, Jeffrey and sugar pines, also incense cedar and white fir. Wild fuschias (*Zauschneria Californica*), scarlet penstemon, purple aster and goldenrod lent color to the scene, while on the drier desert slope below were fields of that fascinating member of the mint family, Desert Ramona, growing in clumps of





SUMMIT OF MOUNT SAN JACINTO (10,805 FEET)

Photo by C. J. Fox



GROVE OF PALMS AT MOUTH OF ANDREAS CAÑON, AN OLD INDIAN  
CAMP GROUND

Photo by C. J. Fox



SPEARHEAD

Found by John P. Dexter, July 27, 1914, in Hetch Hetchy, near Rancheria Creek.  
Presented by him to the Sierra Club. The original spearhead  
is an inch longer than the reproduction

soft gray foliage, in charming contrast to the royal purple flowers in large but delicately interrupted whorles.

The trail now leads past Hidden Lake, a small well-concealed basin of water without outlet, on to Tamrac Valley, with its numerous tall and stately tamrac pines, a beautiful camping place. Due largely, however, to a great dearth of signposts during the day's walk of fifteen miles through this national forest, with its many diverging paths, it was after dark before all the party were all accounted for in camp. No pack train had arrived and the scouting party formed by our good leader, Ernest Dawson, failed to reveal any trace of it. It were better we had heeded those rumblings of Tahquitz! However, some venison obtained from some hunters this first day of the deer season was roasted, some dried figs were discovered in someone's knapsack, and a box of after-dinner mints completed the delusion. A cache a mile distant, belonging to packers, was commandeered and each of us rolled up in a single blanket around the campfire.

But the night was not long as the more hardy were up by three o'clock for the climb of Mount San Jacinto, only two miles distant. The full moon made the cold white rocks stand out almost phosphorescent as we climbed through the bent and broken Murray and limber pines to well above the timber line. The sun rose a brilliant ruby red out of the mists of the Colorado Desert. Down in the west the great mountain peak cast its shadow over the little farms nestled against the foothills, and beyond, though not visible, were the orange groves of Riverside. Over 8000 feet almost directly below was the San Gorgonio Pass, joining these two landscapes of such striking contrast. Southeast were the Santa Rosa Mountains, and to the south Palomar, Cuyamaca, and the Laguna mountains.

Soon after return to camp one most welcome pack animal arrived with provisions and the party was soon off in fine spirits for the day's hike of six miles. The sheer view we had at midday from the ridge at Hidden Lake down over the Coachella Valley and on toward Salton Sea was impressive. A short dark line moving slowly across the floor of the desert, dotted with creosote bushes, proved by our glasses to be a Southern Pacific train. Early next morning dunnage was left for the packers to return to Los Angeles by parcel post, and the party began the ten-mile descent to "the land of the palm." Ours was the first large party to use this trail, lately completed by M. S. Gordon at his own expense. We soon descended from the pines through manzanita and mountain mahogany into the elfin forest of "ribbon woods," with their shreds of reddish bark hanging about the branches. This is the chamise of the higher zone (*Adenostoma sparsifolium*), and for a mile we journeyed amongst its sweetly fragrant white blossoms.

But as the trail descended the thermometer certainly ascended. However, a half-hour's shower proved most refreshing, and we were ready for lunch in the grove of magnificent native fan palms (*Washingtonia*)

at the mouth of Andreas Cañon. This grove a hundred years ago, according to Pablo, an Indian, was the annual meeting place of the Agua Caliente Indians, a few of whom may be seen today around the hot springs below. Mortars and hieroglyphics can still be seen in the nearby caves. Last year the club had camped here and explored five nearby cañons, tropical with thousands of these palms. Farther from the stream there is only cactus, greasewood and mesquite. The "barrel cactus" grows nearly head high, and by cutting out the top with a hand ax and crushing the pulp with the handle, a cup of watery juice can soon be extracted which easily allays thirst on the desert.

But again is heard the honk of the mountain buses, and we gather the stragglers of the group to wave adieu to the most varied scenes of this four-day trip, and after a stop at Palm Springs to test the mud baths and see the Desert Inn, the enjoyment and the hardship of the outing mingle in pleasant memory.

#### CLUB GATHERING

Wishing to bring more of the spirit of informality into the annual indoor reunion of the Southern Section of the Sierra Club, an informal supper was given in the municipal club house at Echo Park, Los Angeles, on November 24th. Arrangements were made with a cafeteria for the hot food and the Sierra Club members did all the rest. At six-thirty there was a real Sierra Club line-up for supper, and nearly two hundred hungry hikers took their plates and cups to the long tables which had been set in the main hall.

After supper the tables were removed and, naturally, a very informal social time ensued while changing the room into an assembly hall. A very good program followed, Mr. Tappaan officiating. This included an informal talk on the High Sierra by Chester Versteeg, illustrated by beautiful natural-color views, mostly by Mr. Ink. Then a little informal dance and it was time to leave, every one feeling that this was the most successful indoor gathering ever held by the Southern Section, and at just half the expense of the more formal affairs, thus keeping in line with the universal purpose of conservation and the avoidance of useless expenditure.

#### MUIR LODGE

The Muir Lodge reunions in the spring for John Muir's birthday celebration, and in October for the dedication anniversary, are events long anticipated and largely attended. But Muir Lodge means more than that. Almost daily, along the high, winding trail come members of our big mountain family to rest in their own mountain home. It is a well-observed code of honor to leave Muir Lodge a little cleaner and the fire-

wood a little more abundant than one found it. The additional dressing- and locker-rooms and women's out-door sleeping quarters have temporarily solved a difficulty for which the steadily increasing patronage demanded a solution. By its thousands of visitors Muir Lodge has abundantly justified its existence.

#### LOCAL WALKS OF SOUTHERN CALIFORNIA SECTION OF SIERRA CLUB

Although some faces are missing from our local walks since the war, nearly every week sees an enthusiastic band of climbers starting out for a one-, two- or three-day outing. Once in a while, by the help of a fortunate holiday date, we even manage a four-day trip. In the summer of 1917, those who could not stretch their vacations to cover a High Sierra trip enjoyed a week's outing among the mountains of the San Gabriel Divide. Our itinerary ranges from San Jacinto and San Geronimo in the southeast to Pinos far in the northeast, and from Gleason and Pacifico overlooking the desert on the north to the hills along the coast.

On the recent trip to Liebre Mountain the club was royally entertained by Mr. Collins at Oak Ridge Ranch. Milk, fruit and melons were furnished ad libitum, and he even built a Dutch oven for their special use. His "good-by" was accompanied by a cordial urging to come again.

Some particularly attractive trips are now being planned by the Local Walks Committee.

#### MUNICIPAL MOUNTAIN CAMP

Realizing the benefits of a mountain vacation, Los Angeles City Playground Commission has established a summer camp in Seeley Flats in the San Bernardino Mountains. The camp has grown until now there is permanent equipment for two hundred and seventy-five campers, and four hundred have been accommodated at once. As each one renders some slight assistance every day, the small amount of \$7.50 gives a happy, healthful vacation of two weeks, transportation included, and everyone feels part of the big family.

The camp is reached by automobile stage, and the road winds through beautiful country and climbs to an elevation of about forty-five hundred feet. The cabins are arranged in a semi-circle, with the lodge, dining quarters and ball courts completing the circle. Across the creek and a little to one side is the plunge.

The commission is now building a second municipal camp on a site of eighty acres, near Seven Oaks. This gives practically everyone a chance to "Go to the mountains and get their good tidings."

## TRAIL BUILDING

At a late meeting of the Southern Section committee, it was decided to use all money collected from the five-cent fees on the local trips for trail building and sign posting exclusively. The Southern Section has lately expended one hundred dollars with a like sum from the Government in building a trail near Mount Islip. They are also expending fifty dollars with an equal sum from the Government in the much needed sign-posting of the San Jacinto Mountains. They are also doing some trail work at Iron Mountain.

## INVASION OF OUR NATIONAL PARKS

*Sheep owners want to graze sheep in national parks. This would despoil the parks without greatly increasing the supply of wool and mutton*

What are our national parks for—to be enjoyed by people or to be despoiled by cattle and sheep?

"The invasion of the enemy," is an expression that need not be limited to war usage. It exactly fits a condition of internal affairs here in the United States that is far removed from battlefields and warring men. The territories being invaded are the national parks. If the invasion continues these regions which belong to all the American people will be monopolized by a few individuals.

Certain interests, individual and collective, are constantly endeavoring to use these parks for their own commercial benefit. The friends of the people's playgrounds have again and again thwarted efforts that were being made to use these wonderlands for stock pasture. Now there are people who are taking advantage of the present need for increased food production, to secure permission to graze cattle and sheep in our national parks. Last summer certain stock men seized the opportunity offered by the urgent national need of food and undertook to get the Federal Government to permit grazing in parks. In California the friends of parks acted quickly and saved most of Yosemite. The stock men did succeed in getting possession of two comparatively small areas. Increased efforts are being made to pasture the parks in 1918.

We all know that more mutton and more wool are needed, and that the sheep industry should be increased. Grazing grounds are essential, but there is ample opportunity for grazing outside of the national parks.

The Department of Agriculture says, "There remain practically no lands in the public domain (unreserved public lands) that are fit for any other use than for the grazing of livestock. They should therefore be used for that purpose." Does it seem reasonable to graze sheep in the national parks when there is government land not in use that is fitted for that purpose?

Then there are the national forests, covering an area of approximately one hundred and seventy-five million acres. Of this about five-eighths

PLATE CCKII.

SIERRA CLUB BULLETIN, VOL. X.



ZION CAÑON

Courtesy of the Salt Lake Route



SIERRA CLUB BULLETIN, VOL. X.

PLATE CCXI.



ZION CAÑON  
Courtesy of the Salt Lake Route

is classed as grazing land—and is not forested as is commonly supposed. These grazing acres were reserved for grazing purposes and are being so used. But a part of these remain that are not now being grazed. Would it not be reasonable to make full use of this land before even considering the national parks for grazing?

A national park is an area that has been so created by Congress because it possesses unusual scenic attractions or features of scientific interest. The purpose of a national park is recreation, education, enjoyment, and the general welfare of the men, women and children of the land. The statesmen who created these parks did so because they realized that grazing or other commercialization would spoil them for use by the people. To graze national parks would prevent the use for which they were created and would ruin their scenic resources. The grand total area of the national parks is small. The total grazing area in national parks is exceedingly limited, and if all this grazing area were used it would produce only a small per cent of the wool and mutton needed.

By encouraging the grazing of sheep in available sections east of the Mississippi River and in the extensive unused lands in the South, a large increase in sheep production would result. By making the fullest use of the public domain, utilizing the national forests—which are mostly grazing land, and increasing sheep production east of the Mississippi and in the Southern States, there will be ample sheep to supply the demand. A. C. Bigelow, president of the Philadelphia Wool and Textile Association, says: "There is only one source left open now from which we can obtain an increase of sheep production, and that is in the farming sections east of the Mississippi River, and in the unused land areas of the South."

At the present time the use of our national parks for grazing is inexcusable. Sheep ruin parks for the use of people. They destroy one of the greatest attractions of the outdoor world—the wild flowers. But the sheep isn't to blame. It is his nature to eat wild flowers, and not only the blossoms, but the plants and then the roots. At Crater Lake National Park there isn't a wild flower to be seen. Years ago sheep grazed within the boundaries, and although they have not been in the park for years, the ground is barren of flowers.

There is a stock man in the West who is making every effort to get permission to graze thousands of head of sheep in Mount Rainier National Park. This park is the most wonderful wild-flower garden in all the world. This man, together with others of his kind, is asking for grazing privileges "during the period of the war." It is an old, insidious plan under the guise of patriotic motives. With wool and mutton bringing higher prices than ever before, we find sheep owners willing to use national parks for pasture for sheep at ten cents a head for the season. Is this patriotism?

During these war times the American people need their national parks more than ever before. And after the war the need will be still greater.

The parks are needed as nature made them—not despoiled by cattle and sheep.

The strength of a nation lies in the mental attitude of the people. And the right mental attitude is very largely acquired by wholesome recreation in the outdoor world—especially in places of scenic beauty. Such places as national parks help us to maintain our strength and courage and to gain a clearer vision of the problems and the emergencies of life. The English people admit that they made a serious mistake in the early stages of the war by neglecting outdoor recreation.

Early last summer there was some doubt in the minds of the people as to whether or not the national parks would be open on account of the war. Secretary Franklin K. Lane emphatically announced that they would be open as usual, and said: "It is even more important now than in times of peace that the health and vitality of the nation's citizenship be conserved. Rest and recreation must materially assist in this conservation of human tissue and energy, and the national parks offer opportunity for just this thing." During this same summer, the busy war year of 1917, five hundred thousand people found much-needed rest and were inspired to greater patriotism by visiting these wonderlands.

It would be a national calamity if the warring enemy could destroy the natural beauty of the United States. Grazing cattle and sheep in our national parks is a distinct step in this direction. The grazing of national parks discourages outdoor recreation. If livestock are in these parks there are thousands of people who would not go to them. And there are other thousands of people who, because of the presence of livestock, would naturally conclude that these natural wonderlands could be of no great merit for people if they were used for cattle and sheep. Our national parks—the world's unrivaled wonderlands—are the greatest places for outdoor recreation. Grazing in national parks would be the death blow to their supreme use. This would weaken us as a nation. You might let your senators and congressmen know that you value national parks. These men are so occupied with war matters these days that it may not occur to them that there is even a possibility of an invasion of this kind. Let them know that you are eager to defend our public playgrounds.

Mrs. JOHN D. SHERMAN

#### OPENING OF ZION CAÑON—UTAH'S SCENIC WONDERLAND

Nearly two generations have passed since the Mormon pioneers trekked southward along the west base of the Wasatch Mountains and made their first settlement in Southern Utah. Following up the waterway of the Rio Virgin in the location of their settlements, these pioneers passed eastward over the rim of the great "Hurricane" Fault, that has since been termed by geologists the greatest known break in the earth's surface, and, making their way to the upper reaches of the stream, came to the point where the Rio Virgin was formed by the conflux of two creeks

—one flowing from the east and the other from the north. From the tribes of the Piutes that then inhabited the country, the Mormons learned that the creek flowing from the east was called Paranuweap, and the one flowing from the north was known in Indian lore as Muk-ontuweap. They were likewise told that where this northerly creek cut down through the mountains was a most beautiful cañon, emblazoned in many colors.

Later the great leader of the Mormon church, President Brigham Young, in one of his frequent visits to Utah's "Dixie," was told of the cañon's wonders and made what was then a most strenuous journey that he might view them. Standing at the southern portal of this geological marvel, between the two towering domes that mark its southern entrance, this religious enthusiast stood spellbound before the scenic splendor that faced him. With uncovered head, gazing far northward into the depths of the cañon proper, he declared to those accompanying the expedition, "This is Little Zion." To the Mormon zealots the christening by their leader was to them the final word, and from that time down through the years this great cleft on the southern spur of the Wasatch range has been known as Zion Cañon.

Located in this most remote section of Utah, far from the point where it might be reached by railroad travel, this American scenic marvel has remained practically unknown, only visited from time to time by some extreme enthusiast who had heard a faraway murmur of its grandeur. In 1913, Governor Spry's official attention was directed to the marvels of Zion Cañon, and after a personal visit, he decided that the highway division of his administration should accomplish the construction of a highway to the border of the National Monument, that had been set aside by President Taft to include Zion Cañon and its closely adjacent territory. In 1916, the United States Government, under the influence of Senator Reed Smoot, appropriated \$15,000.00 for the construction of a highway connecting the heart of Zion Cañon with the southern boundary of the National Monument, to which point the State planned to carry its own highway. An east and west county road, from the station of Lund on the Salt Lake Route, had already been constructed, connecting with the State highway. With these connecting highways, the completion of the Government road into the cañon gave uninterrupted passage for automobile travel between the Salt Lake Route and Zion Cañon.

Even before the completion of the highway, a well organized transportation service between Lund and the cañon proper was arranged for, and in the very heart of the cañon itself there was a "Wylie Way" camp well under construction, founded upon the same plan for the entertainment of tourists and visitors that rendered the "Wylie Way" camps in the Yellowstone among the most successful enterprises of their kind in America. Thus was the opening of Zion Cañon brought about, and now the visitor may reach its wonders by a most interesting automobile ride of an even one hundred miles, starting at the station of Lund, on the Salt Lake Route, and proceeding over a splendid highway.

## OVER KEARSARGE PASS IN 1864

[NOTE: On October 12, 1917, at Independence, Cal., Guy C. Earl, W. H. Spaulding and Chaffee E. Hall spent the evening with Thomas Keough, a boyhood friend of Mr. Earl in Owen's Valley. Mr. Keough has lived in Owen's Valley since 1863, and gave us some very interesting accounts of the early history of the valley, including the following story of a prospecting tour through the Southern High Sierras.]

On July 4, 1864, eleven of us started from Independence on a prospecting trip through the Sierras. Our first task was to build a trail up Little Pine Creek on the east cliff of the mountains. I have sometimes heard it said that the trail over what is now called "Kearsarge Pass" is an old Indian trail. The fact is, however, that our party built this trail in order to get our animals up over the top of the Sierras. It might have been possible for a man to work his way on foot up over this pass, but there was no sign even of a foot-path until we built the trail in the summer of 1864 when we started on this prospecting tour. We called the pass "Little Pine Pass," after Little Pine Creek, which heads near the pass. It was a rough trail we built, but it sufficed for our purposes and we got our animals up over it. In the party were John Bubbs, Tom Carroll, John Beveridge, Tom Hill, Henry Kettleston, Sullivan, Pugh and myself, with three others whose names I cannot recall. When we got up over the pass five decided to return, leaving six of us to go on.

We went westerly down the South Fork of the King's River until the cañon became impassable. In the cañon we met a number of scientists headed by Professor Brewer. They named Mt. Brewer after him. Prof. Brewer was trying to find a way across the mountains, and we told him how to get into Owen's Valley over the pass by the trail we had just built.

We kept in the cañon of the King's River to a point far west from where a large tributary flows in from the south. This tributary is called "Bubbs Creek." It was named for John Bubbs, who was one of our party. He was a cattle man and, afterwards, made his home in Visalia.

When the cañon of the King's River became impassable, we crossed the river and struck up the south wall of the cañon into the meadows, where we came across those mammoth trees—now called the Sequoias. I have no doubt those are the trees in what is now called the General Grant Park. We went around the trees and examined them, but made no marks on them. I have read an account of how these trees were "discovered" later and how one of them was called "General Grant,"\* but this discovery occurred a number of years after our journey. From the plateau where we found these trees we traveled west until we came down into the valley where we found some placer miners. They were

[NOTE: In Prof. Brewer's party was Clarence King, whose "Ascent of Mt. Tyndall" described in thrilling fashion some of the experiences of the Brewer party on their explorations during this summer of 1864. Prof. Brewer in his account of the trip says: "A day and a half was required to make the distance of twelve miles which lay between Camp 179, in the south fork cañon, and the summit of the Sierra; although the labor of crossing was much facilitated by the fact that a party of prospectors had crossed here not long before and had done a good deal toward making a passable trail." California Geological Survey. Vol. I. Geology, p. 394.]

\* These trees were not, however, discovered by Mr. Keough's party. They were known some years before this date.—J. N. Le C.

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SIERRA CLUB BULLETIN, VOL. X.

ZION CAÑON—THE THREE PATRIARCHS  
Courtesy of the Salt Lake Route

SIERRA CLUB BULLETIN, VOL. X.

PLATE CCXIV.



ZION CAÑON—COURT OF THE PATRIARCHS  
Courtesy of the Salt Lake Route



the first people we laid eyes on from the time we left Independence, except for Prof. Brewer and his party of exploring scientists. These placer mines down near the San Joaquin Valley were not showing up well. We, ourselves, tried it out and cleaned up only thirty-eight cents, so we decided to strike out to the northeast. We went north by the old Jackson ranch into Squaw Flat, across Squaw Flat and up into the mountains until we struck the South Fork of Joaquin River about 35 or 40 miles east from Middleton, an old mining camp on the San Joaquin. Then we followed the river, you might say, to its very head in the main Sierra Nevada. There we had for dinner the last of our stock of provisions. Beveridge and I took our pans and went over to a red hill where we got a good prospect; but we were out of grub. We struck east, hoping to find a way over the Sierras and down again into Owen's Valley, but we could not get any further east—got into the main mountains and then had to back out and work south. We worked south until we got down on to the North Fork of King's River. It was a terrific task working around granite cliffs and over great boulders with our horses. Beveridge and I got down on to the North Fork one day about sun-down with the animals. The rest of the boys had gone ahead and had been fishing all day, but could not catch any. Beveridge and I coming into camp with the horses asked the boys what they had got for us to eat, and they pointed up to a rattlesnake hanging on a limb that they had skinned for supper for us. I looked at John and asked him what he thought of it. I said, "It looks pretty tough," and John says, "Yes, I can't go that." Just while we were talking it over, two grouse lit in a tree. I grabbed the shot gun and brought down both of them. We made a little fire and after awhile scraped the fire away, dug a hole in the hot sand and put in the two grouse just as they were, feathers and all, piling the ashes and fire on the top of them. After about two and a half hours, we took them out and they were done to a turn. John Beveridge ate one of the grouse and I ate the other. Then we held a council and the next day slaughtered one of the horses. It was John Beveridge's horse, called "General Grant," an old horse about twenty-five years old. We made a rack out of green willows and jerked a lot of him and roasted a lot more of him in front of a big log fire. After we got everything ready we divided up the jerky and roast meat in our haversacks and struck south. We picked our way along with the animals, but the country kept getting rougher and rougher—deep cañons and precipices, a terribly rough, bouldery country—all bare granite. One of our party got part way down a cliff where he could neither get up nor down, and we had to tie our blankets together and let them down and pull him up. It was a several thousand-foot drop down below where he was on the cliff. We never could understand how he got down there. For two days we tried to work south. Finally we got into a cañon full of boulders, where we could neither get our horses one way or the other. They were so worn out and hungry that we finally killed

them. They would have starved to death in that barren granite. We left our saddles and everything, and took only our clothes and necessary blankets and went on afoot. We lived entirely on horse meat. I don't know how horse meat might be with a little salt, but it certainly is not very nice without salt. It is just a sweet, sickening kind of meat without salt, and we tried to chew it as we traveled along, but the meat would keep swelling up in your mouth like a sponge until you could not work your jaws.

Traveling without the animals was easier, but the country kept getting even more impassable. In working down into one cañon, thousands of feet deep, we had to slide down a water-run. Sometimes we would slide thirty feet and fetch up on a bench, throwing our blankets on ahead. We camped down in one of these cañons one night and then, the next morning, started east in the hope of reaching the summit of the Sierra Nevada at a place where we could go down the easterly cliffs into the Owen's Valley. By night we had reached the summit at a place they now call "Taboose Pass," about eighteen miles north of Independence, and the next day we worked our way down the east cliff of the Sierras along Taboose Creek into Owen's Valley.

We had no map of the country, and none of the streams or mountains were named at that time, except the San Joaquin and the King's rivers. The first peak named, I think, was Brewer, named by the party of scientists we met.

The rest of our party, who left us soon after we climbed up over Little Pine Pass, found a gold mine near the pass on their way home which they called the "Cliff Mine." This mine developed into quite a rich ledge, and it was through this discovery that the pass came to be known as "Kearsarge Pass." Down in Owen's Valley, south of Independence, there is a low lying range of hills. In the early 60's the Hitchcock boys discovered a mine in these hills which they called the "Old Abe" mine, and they called their district the "Alabama District." They were Rebels and in those days "Old Abe" was a term of ridicule. But they named the district in honor of the Confederate cruiser "Alabama." These hills are now called the "Alabama Hills." Our crowd, however, were all Union men, and when the news came that the Kearsarge had sunk the Alabama, our boys named the district where the Cliff Mine was the "Kearsarge District" to taunt the Rebels. The little town which grew up at the mine was called "Kearsarge City," and the pass came to be called the "Kearsarge Pass," and the mountain just to the north of the pass "Kearsarge Mountain."

EXTRACT FROM LETTER TO HORACE M. ALBRIGHT

April 16, 1917

*Dear Mr. Albright:* While I have it in mind, there is one matter that we of the Sierra Club are very anxious that the National Park Service

should undertake without delay, and that is the building of a trail from Hardin Lake on the Tioga Road down into Pate Valley, which is a Yosemite-like valley in the Tuolumne Cañon about ten miles above Hetch-Hetchy. Cross the Tuolumne River at this point and continue the trail on up to connect with the main Rogers Lake, Pleasant Valley Trail, on the other side of the Tuolumne. This trail is of immense importance for the development of the northern portion of the Yosemite National Park, and now that the Hetch-Hetchy crossing is to a great extent eliminated and undesirable, it has become doubly important that this trail should be opened up without delay so as to make the northern portion of the park accessible, and this will be the shortest route into it from the Yosemite, as well as making the finest portion of the Grand Cañon of the Tuolumne accessible. I had intended taking this up with Mr. Mather, but appreciate that it would mean too great a delay. This trail is mentioned on page 251, "National Park Notes," in a foot-note, to which note I call your attention.

Very sincerely yours,

WM. E. COLBY

#### REPORT OF WORK DONE IN MUIR TRAIL, 1917

After my trip last year with Mr. McClure, the State Engineer, I was impressed with his belief that under no consideration should any but a Class A trail be constructed.

With this in view, I issued the following to Deputy Supervisor Jordan and Ranger Hughes before they entered upon the work:

"The State Engineer insists on a Class A trail, and you will be governed by the specifications laid down in the trail manual for this type of trail. Tread should never be less than 15 inches, more if necessary to meet the situation. In location work the trail should be laid off in sections of like type, each section measured and numbered, and a record made of costs chargeable to each. Packing, grub and cook costs will be kept separate, to be pro-rated later.

I want to impress upon both of you the importance of locating the trail properly, and I know that I can depend upon you to turn out a trail that we will be proud of."

This, of course, was supplemented by a thorough discussion of the whole project, so that we started on the work with our ideas of construction unified.

The work accomplished, although higher in cost than last year, is of a higher standard than ever before attempted on this forest, and will be, I am sure, a work that will bear the inspection of the most critical.

#### COSTS

As last year we divided construction work into three types, as follows:

Class A is solid rock, from 10 per cent to 100 per cent slope.

Class B is talus, consisting of small and large broken slides, and are at present impassable and require blasting.

Class C is general; dry and wet meadows, talus covered with earth, solid rock under 10 per cent, that requires only roughening, gravel and dirt slopes that do not require blasting, scattered boulder strewn flats and benches.

Type	Miles	Total Cost	Cost per Mile
A .....	.19	1556.80	7784
B .....	.41	310.73	758
C .....	7.3	2333.14	320
Total .....	7.9	4200.67	532
Bridges .....	Part of two	709.08	...
Total cost .....	....	4909.75	...

The following costs were prorated in the above:  
 Transportation, including wages of packer hire, of horses,  
 loss of one animal, and feed.....\$ 965.00  
 Subsistence, including wages of cook..... 1237.19  
 Moving in and out, and moving camp..... 443.74

Total.....\$2645.93

The cost record shows \$237.80 more charged against it than the expenditures. This is accounted for by:

Powder used, left over from last year.....\$137.80  
 Grub used, left over from last year..... 100.00

\$237.80

A few outstanding bills have not as yet been received, but they are figured into the cost record.

We have on hand practically enough equipment for next year. Powder on hand, 500 lbs. Will need 300 lbs. 20 per cent stumping for next year.

The greatest difficulty was experienced at Barrier Rock, some few miles below Muir Pass, on the Kings River side. This reef rises abruptly from the stream bed on both sides, and it was necessary to blast almost a half tunnel in order to get through it. Mr. McClure will, however, understand this, as he viewed this place on our trip last year.

This year was a difficult labor season, for even under normal conditions it is hard to keep men at these high altitudes.

#### FUTURE PLANS

I want to strongly recommend the use of all present and future appropriations on the Sierra Section, from Muir Pass north until completed. I base this recommendation on the fact that we are now fairly well organized, and have the equipment on the ground to continue, and it seems to me to be poor economy to divert small or large sums to start work on other portions that are perhaps in better shape to handle temporary travel than we are. The section from Palisade south can wait till the last, as travel can go down Kings to Simpson Meadow, and over to the South Fork by fairly good trails, while north the route is in bad shape.



LOOKING UP SOUTH FORK OF SAN JOAQUIN RIVER  
Toward Mount Goddard, from near Hell-for-Sure Trail  
Photo by H. H. Bliss

McLoud & Geodetic party of  
 George Davidson  
 J. J. Gilbert

Summit Mount

Isaac Weston

J. W. Egan

S. H. Finley

Repaired the Tioga Mine Road  
 for 40 miles, opened trail to

Mt. Conness, & made the ascent  
 to summit practicable. Then

occupied the station for Azimuth, Latitude, Vertical,

& Magnetism. June, July,  
 August, September 1890.

Stations observed upon Mt.  
 Mucho 127<sup>m</sup>. Mt. Diablo 143<sup>m</sup>.

Round Top 72<sup>m</sup> Mt. Grant 51<sup>m</sup>  
 Lone Mt. 102<sup>m</sup> Hoffmann 138<sup>m</sup>.

approx height 13,500 feet

Barometric, mercurial 1910 inches  
 Boiling water 190.2 Fahr.

Measured above line for connection  
 599.115 feet near Camp.

# RECORD OF U. S. COAST & GEODETIC SURVEY

Left by party under Professor George Davidson on the summit of Mount  
 Conness, 1890. Removed from the mountain by Walter L. Huber, July  
 24, 1917; now deposited in the official records of the Sierra Club

Next year I plan to start the crew at the bridges on the South Fork of the San Joaquin, and then work up to Muir Pass via Evolution as the season advances. To work to good advantage, the low country must be worked early, and when the snow goes off sufficiently on the higher elevations, stop work low down and attack the higher portions. There is usually only about 30 days you can work elevations of 11,000 feet or over, so we must get at them when the opportunity presents itself.

If we finish the Evolution Section, we can continue work from the Piute Bridge to Seldon Pass. I would, of course, plan to reserve enough money to get started in 1919 pending an additional appropriation.

I sincerely hope some better method of payment can be devised. It is impossible to keep men and maintain credit if bills are not paid more promptly.

I want to take this opportunity to commend very highly the work of Mr. Hughes as foreman of the crew. He has carried the work under some very difficult conditions in fine shape, and I hope he can again be assigned to it.

I attach map, photographs, and memo of Ranger Hughes on the season's work.

M. A. BENEDICT,  
Forest Supervisor

#### FOREMAN'S MEMORANDUM OF SEASON'S WORK

The trail crew for this year's work left Cascada on June 24, and June 26 they reached Aspen Meadow,  $1\frac{1}{2}$  miles above the Piute Creek bridge. On June 27, camp was established and the tools assembled. On June 28 work was commenced at the bridge, working from there southeast up the South Fork of the San Joaquin. The foreman and Mr. Jordan, who went in with the crew to help lay out the trail, were impressed with the idea that this year we were going to build a better trail than we had ever built before, and the lowest percentage of grade obtainable was to be carried, and it must not exceed a maximum of 15 per cent.

A survey was made from Piute Bridge to the foot of the hill, at the mouth of Evolution Creek, a distance of  $3\frac{1}{2}$  miles. A very good grade was obtained, only in one place was 15 per cent used, and that only for a few rods, the average grade for the entire  $3\frac{1}{2}$  miles being less than 6 per cent.

It was proposed to build the trail up the South Fork, keeping on the north side of the river, and bridge Evolution Creek, and thereby avoid crossing the South Fork twice.

A good trail could have been built from the ford up, but it was found impractical to bridge Evolution Creek, and not even a good ford could be found, so this idea had to be given up.

The ford across the South Fork, below the mouth of Evolution Creek, has proved to be a very dangerous ford during high water. A man was drowned there last summer, and prior to that several head of stock had been drowned. This year we lost a pack mule on this same ford, for which the State has to pay.

Below the ford some good bridge sites are available, but the expense



of building a trail up the river from them would be prohibitive. A site was selected a short distance above the ford, well out of the path of snowslides. A good foundation of solid rock, well above high water, was obtained on the north side. On the south side a reef of rock came down to the river, but had to be supplemented by a rock crib eight feet high. Cement was used to chink between the rocks on the side facing the river, and about four feet on each side. The span measured 68 feet and the stringers five by eight, with an average length of 40 feet, were hewed out, tent posts, caps, and mud sills were framed in extra lengths, the hangers were cut and flooring was split out, and everything was piled so that it would not warp.

From the lower bridge site to the upper one, a distance of 68 chains, the old trail ran through a meadow, and some very soft places had to be crossed that would have to be corduroyed, so a new route was surveyed around the meadow on the south side on an average grade of three per cent, which will always be high and dry.

The upper bridge site is a short span of 32 feet. It is about one-quarter mile above the mouth of Evolution, and as Evolution Creek carries about as much water as does the South Fork above it, there is much less water to cross than at the lower bridge. On the south side of the river we have a good foundation of solid rock well above high water. On the north side a bent 32 inches high, set on solid rock, can be used. All timbers for this bridge are framed and properly piled, with the exception of some flooring. No timber is available here that can be split, and poles will have to be used.

Some trouble was experienced in keeping men. A spirit of unrest seemed to be in the air, and four men quit. They claimed that there was no sense in working in so isolated a region when better wages and conditions could be had for the asking in places nearer to civilization.

A different system of packing was used this year; the pack train was kept with the crew and not allowed to stay over in Cascada any longer than was necessary to load the pack animals. The main part of the supplies were packed in during June and in the early part of July, and stored at Aspen Meadow. Extra stock had to be hired for this, and two men sent with the pack train, as the streams were too high for one man to safely handle the stock.

On August 10 this piece of work was completed, no very difficult places were encountered, and most of the blasting was done around two points, one below and one above Aspen Meadow. An average tread of 30 inches was maintained on this piece of trail.

On August 10, the camp was moved to the Muir Pass, and a camp established four miles below the top of the Pass at the last lake below Lake Helen; on the Kings River side work was commenced at Barrier Rock by the drillers, and the graders worked towards the Pass.

Notes were taken in the Pass of soft spots and places where the snow was lying, and a preliminary route was marked out. Below the pass,

from Lake Helen down, the country was thoroughly looked over, and it was decided to abandon all the old trails and build the new trail up the river. Several switchbacks had to be used to get up on the first bench, and then for half a mile a very good piece of trail was built, about half of which is on a seven per cent grade, and the rest is 15 per cent. From here for about one-quarter mile around the shore of a lake it is level. From the upper end of this lake to the crossing below Lake Helen some short pitches of 15 per cent and several switchbacks were used, but a majority of this trail will not exceed 10 per cent.

Just below Lake Helen it will be necessary to cross a patch of snow, which will always be there. From Lake Helen to the top of the Pass, a distance of  $1\frac{1}{4}$  miles, a good trail was built, and an effort was made to avoid all soft spots and build the trail away from places where the snow lies longest. One-quarter mile is 15 per cent, the rest averages less than 10 per cent.

At the top of the pass we stopped; no work was done on the west side. Barrier Rock proved to be a very difficult piece of work. The rock laid in floors, tapering to a feather edge on the overhanging side, and when a tread was blasted out these floors would slide off. This was repeated several times before a tread was obtained that would hold, and a short pitch exceeding 20 per cent had to be used.

During the month of August thunderstorms were numerous, and during the latter part of September the nights were very cold. The crew were dissatisfied and trouble was experienced in getting them to stay with the work. Three months of this class of work is too long for an average crew to stay, and as no men could be hired to continue the work the crew had to be disbanded.

JOHN M. HUGHES,  
Foreman Muir Trail

#### BEQUEST TO THE LE CONTE MEMORIAL LODGE

Mr. James B. Wade, who died in 1916, bequeathed the sum of twenty-five dollars to the Joseph Le Conte Memorial in Yosemite Valley, to be used in the maintenance of the lodge.

#### FOLLOWING JOHN MUIR'S CASSIAR TRAIL

After leaving Mount Robson last summer, Miss Nettleton and I returned to Prince Rupert and continued up the Inside Passage to Skaguay. We were unfortunate in having cloudy weather, and except for one glorious day at the Taku Inlet, the high mountains remained persistently hidden. Even under such conditions, however, each day brought a succession of beautiful pictures that made the trip one long to be remembered. At Skaguay we took the White Pass Railway as far as Lake Bennett. We had planned, earlier in our trip, to return afoot

over the old trail of '98, but were so discouraged by reports that bridges were out and the trail obliterated, that we gave up the idea. Much to our disgust, we found too late that this was only the usual wet-blanketing that every traveler suffers who attempts to set foot off the beaten track. From the car window we could follow the trail almost every step of the way, and though slides had occurred and a bridge was gone, in August, at least, neither stream crossing nor trail presented any real difficulty to any one accustomed to trail travel.

At Skaguay I parted with my traveling companions and took an American boat down to Wrangell. Five years ago, when Mr. Muir began work on "Travels in Alaska," my aspirations were turned toward the Stikine River, and I determined to take the first opportunity to follow his old trail. Opportunity came this year when I met Mrs. Winifred Hyland, trader, fox-farmer, outfitter for big-game hunters, and adviser and court of appeal to at least a hundred Indians. On her invitation I promptly abandoned family and friends and started trustfully alone on the hundred-and-fifty-mile journey up the wild and lonely Stikine. A boat runs up once a week during the scant five months of the year when the river is open. Mine was a tunnel boat about forty feet long, with a powerful gasoline engine which forced her slowly but surely up against the powerful current. It took us from Tuesday morning at ten until Thursday morning at nine to go up, though we made the return journey in ten hours. Travel is not heavy on the Stikine now. Forty years ago, Mr. Muir says, nearly two thousand miners went up the river in a single summer. This year I doubt whether there were more than fifty people in all. Despite the war, eleven big-game hunters went; one family from Oregon settled up river; one mine was in operation with six men from "outside"; two or three soldiers came back from the war; a new schoolmaster and a new doctor arrived. I myself represented the whole bulk of tourist travel—considerably less than a hundred and fifty pounds I hasten to say.

The river trip is marvelously beautiful. Mountains, all of them snowy and glacier-hung, tower from four to eight thousand feet above the river. The shores are densely forested, for the most part with hemlock and tideland spruce. The most remarkable of the glaciers, the Great Glacier, breaks off at the river brink in a colossal wall three miles in width. Telegraph Creek, trading post and center of population for a district of some fifty thousand square miles, I made my headquarters. The whole district at present numbers only about thirty whites—it has sent twenty-nine men to the front. During the first part of my stay here I made day trips in all directions and two short camping trips—one across the Stikine, the other thirty-five miles downstream, near the Jackson cabin. Captain Conover, a neighbor on the Clearwater, seven miles away, who has lived on the river for twenty years, offered himself as guide, and with him I went canoeing through rapids, mountain climbing, and big-game hunting with a kodak. We saw six bears and eleven goats, but unfortunately secured no pictures.

During my last three weeks in the country, with a half-breed girl as companion, I traveled with three Indians and a Hudson's Bay Company packtrain over the old miner's trail to Dease Lake, seventy-five miles northeastward from Telegraph. We crossed the Arctic-Pacific Divide into Mackenzie River headwaters, journeyed by scow thirty miles down the lake, and then afoot took a "knapsack" trip some twenty-five miles further, packing our outfits on the backs of three dogs. To carry a pack upon one's own back would be to lose caste utterly in the eyes of the Indians. We visited the one mine now in operation on Thibert Creek and continued on with our novel packtrain to the base of Defot Mountain. I had planned to climb it for the view to northward of which Mr. Muir speaks, but a snowstorm prevented and we had to hasten back to Dease Lake the next day to meet the last outgoing packtrain of the season. I was the first white woman, so they told me at the mine, who had ever traveled in that region "for fun."

MARION RANDALL PARSONS

#### ECONOMIC DESTINY OF THE NATIONAL PARKS

[Passage from an address by J. Horace McFarland delivered at the National Park Conference, Washington, D. C., January, 1917]

I insist the time must soon come when instead of having national parks created by accident or through the devotion of some interested man, we must have a system of national parks all over the land in order to accomplish the upbuilding of patriotism. . . . Congress now has spent a gigantic sum on the national parks—nearly a quarter of a cent per person a year. If it would spend a half cent per year per person for parks, I think Mr. Mather would think the millennium had arrived. And if 1 cent per person per year was provided, he would be unable to comprehend all that could be done for our national parks. Yet Philadelphia spends \$1.40 per person for park purposes; Milwaukee, 93 cents; Pittsburgh, 53 cents. Why should not the United States spend a whole penny for each of us annually in our national parks?

Let me put it in another way. The United States spends the gigantic sum of \$700 a day on its vast areas of marvelous natural wonders; Philadelphia \$655 on her little bit of most inadequate park area; Milwaukee gets away with \$1,076; and even smoky Pittsburgh spends \$862 per day on her parks, which Pittsburgh knows is better than extending cemeteries and providing more policemen.

We need extension of the sort of national park promotion we have recently had. Indeed the kind of management that has been going on the last eighteen months in the National Parks Service is so near business management that I do not see how it can have happened in Washington. Here are Mr. Mather and Mr. Yard, business men, actually managing national parks as if they were a business enterprise. It is extraordinary; but I wish it might be extended, and that we might have a whole lot more of it, and that they might be given money, much real

money to do the job, such as Mr. Schwab would give them if they were working for the Bethlehem Steel Corporation.

I am not throwing mud at Congress, because Congress does the best it knows how, and we who elect its members are the responsible persons. When we get around to having a budget in the United States and working with it like any business man, then we will get plenty of money for parks; but I do not want to wait so long. This appropriation of 1 cent apiece for every inhabitant of the nation ought to come right away, this session; and it should be an automatic, continuing, annual appropriation of 1 cent apiece. That would mean the automatic increase of the support in proportion to the population. . . .

"The economic destiny of national parks" is to promote patriotism; but there is another aspect to it. If we want to be a little bit calculating—and Americans are sometimes said to be a little sordid—then, the economic destiny of the national parks is to bring a tremendous amount of money into the United States from abroad. I wonder if you realize that the one great natural wonder of the United States which is most attractive, and which is not yet safe until it becomes a big national park—Niagara Falls—is estimated to produce \$30,000,000 a year of travel revenue outside of any power use that has been taken from it. Niagara Falls is easily accessible and is visited by 1,500,000 people each year. There is one truly tremendous travel revenue possibility for the United States—a possibility beside which the doings of Switzerland in attracting visitors might sink into insignificance. Indeed, Switzerland could be lost in Rocky Mountain Park. If we are willing to provide the conditions and facilities, the handling of the national parks becomes a purely economic proposition; an investment, not an expense.

But the greatest of all park products, Mr. Chairman and ladies and gentlemen, is the product of civilization, the product of patriotism, the product of real preparedness, the product of manhood and womanhood, unobtainable anywhere else than in the broad, open areas which alone the nation can provide. There, ladies and gentlemen, is a product which we must promote and which we must have, and everything we can do and everything we can spend which will increase the facilities of the United States for intensifying our all too feeble national spirit for increasing the fervor and vigor of our spirit of devotion to the country—every such thing we can do is thoroughly worth while. That is then, ladies and gentlemen, the "economic destiny of the national parks" of the United States.

HON. J. ARTHUR ELSTON,  
House of Representatives,  
Washington, D. C.

May 8, 1917.

Dear Sir: At a meeting of the Board of Directors of the Sierra Club held in San Francisco on May 5, 1917, the secretary was requested to

state to you its position in regard to certain proposed changes in the boundaries of and administration of the Yosemite National Park.

It has been brought to the attention of the board that a petition has been presented to the park authorities which, if adopted by Congress, would cut out of the park a large section, about 100 square miles, throwing the same into the forest reserve. This includes the region in the vicinity of Moraine Meadows and Buck Camp, and in fact includes the entire upper basin of the South Fork of the Merced River, part of the basins of the Illilouette River and main Merced. The object of this petition is to open the area to grazing. The Board of Directors of the Sierra Club is unalterably opposed to any changes in the present boundary of the park, and considers the present proposed change particularly objectionable, as it eliminates some of the finest alpine regions, and also because the suggested boundaries follow section lines only, and not natural barriers which could be properly patrolled.

It has also come to the attention of the Board of Directors that a movement is on foot this year to have the United States Government throw open the Yosemite National Park to stockmen for the grazing of sheep and cattle, due to the possible shortage of foods consequent upon war conditions, and particularly because of the shortage of feed in California this year. The directors feel that no sentiment should stand in the way of so vital a matter as the food supply in the face of so momentous a situation as now confronts the people of this country, and would not oppose such a movement, disastrous as it might be to our great park, if it were absolutely *necessary*. But they are not convinced that it is absolutely necessary this year. The whole forest reserve is now open to grazing, and the small region within the boundaries of this national park, which has been carefully preserved for the past twenty-five years, could not appreciably affect the situation. There are certain stock-grazing interests which for years have been trying to get these privileges within our national park, and are using the present crisis as a leverage to accomplish their purpose.

The directors beg of you to look into these matters with great care, for once the precedents are established it will be difficult to change them.

Very truly yours,

WILLIAM E. COLBY

#### THE ASSOCIATED MOUNTAINEERING CLUBS OF NORTH AMERICA

In May, 1916, nine clubs and societies with common aims associated themselves in a bureau, with headquarters in New York. The membership now numbers ninety-two, comprising about 16,000 individual members, as follows:

American Alpine Club, Philadelphia and New York.  
American Civic Association, Washington.  
American Museum of Natural History, New York.

Appalachian Mountain Club, Boston and New York.  
 British Columbia Mountaineering Club, Vancouver.  
 Colorado Mountain Club, Denver.  
 Explorers' Club, New York.  
 Field and Forest Club, Boston.  
 Fresh Air Club, New York.  
 Geographic Society of Chicago.  
 Geographical Society of Philadelphia.  
 Green Mountain Club, Rutland, Vermont.  
 Hawaiian Trail and Mountain Club, Honolulu.  
 Klahhane Club, Port Angeles, Wash.  
 Mazamas, Portland, Oregon.  
 Mountaineers, Seattle and Tacoma.  
 National Association of Audubon Societies, New York.  
 Prairie Club, Chicago.  
 Rocky Mountain Climbers' Club, Boulder, Col.  
 Sage Brush and Pine Club, Yakima, Washington.  
 Sierra Club, San Francisco and Los Angeles.  
 United States National Parks Service, Washington.

Among the common aims, aside from the exploration and mapping of mountain regions and the ascent of leading peaks, are the creation, protection, and proper development of National Parks and Forest Reservations, the protection of bird and animal life, and of trees and flowers. Many of the clubs and societies issue illustrated publications on mountaineering, exploration, and conservation, and are educating their members by lectures to a deeper appreciation of nature.

The bureau publishes an annual bulletin giving the officers, membership, dues, publications, lantern slide collections, outings, and other matters of interest of each club. Data on mountains and mountaineering activities are supplied in response to inquiries.

Acquaintance with the literature of a subject is essential to efficient work in the field, and the bureau sends many important new books on mountaineering and outdoor life to its members free of charge. A large collection of mountaineering literature has been gathered in the central building of the New York Public Library, and the American Alpine Club has deposited its books therein, providing a permanent fund for additions. A bibliography of this collection has been published by the library. An extensive collection of photographs of mountain scenery is being formed and is available to anyone wishing to supplement the literature of a region with its scenery.

LE ROY JEFFERS, Secretary

476 Fifth Avenue, New York

THE TEHIPITE VALLEY AND THE KINGS RIVER CAÑON, GREATER SEQUOIA

*Address delivered at the Washington, D. C., National Parks*

*Conference by Robert Sterling Yard*

When I began to study our national parks in preparation for the great work we had undertaken, the glories of the Sierra stood out before my



mental vision perhaps in more stupendous relief than any other feature. At this time I was drawing my knowledge from books and men; as yet I had visited no national parks; and the men were enthusiasts.

Almost from the first I learned of the great country between Yosemite and Sequoia, which ought to be a national park some day. In fact that is what I called it, the Ought-to-be-Sequoia, before the name Greater Sequoia was devised. Before I knew anything definite about any other valley in our national parks besides the Yosemite Valley, I was familiar with the fact that the Kings River Cañon and the Tehipite Valley were, next to Yosemite, the grandest valleys on this continent. My teacher was Robert Bradford Marshall, Chief Geographer of the United States Geological Survey, and chief lover of national parks. His splendid enthusiasm kindled the fires in me.

Few whom I had then met had yet seen these valleys, and few I have met since have seen them. They are almost unknown today outside of California, and little known there. Not even Muir, so far as I know, described them, though I have found various references to both in his writings. Yet they are destined to become celebrated next to Yosemite's incomparable valley. I expect to see the day when the three shall inevitably be mentioned together.

Both originate in the everlasting snows of the Sierra summits. The Middle Fork and the South Fork of the Kings River, respectively, have carved them from the living granite. Each lies east and west, a short day's journey, as the trail winds, apart. It was my great fortune to see both last summer, and I can best picture them by reading brief extracts from a record of that trip. (Reads:)

Time will not dim our memory of Tehipite or the august valley or the leaping, singing river as we saw them on that charmed day. Well short of Yosemite, in the kind of beauty that startles and bewilders, the Tehipite Valley nevertheless far excels it in bigness and power and majesty. Lookout Point, a couple of miles south, afforded our first sensation. Here the rising trail emerged upon a broken mass of rock standing well out over the head of the cañon and 3000 feet above it, disclosing Tehipite Dome in full relief. It is one of the great views, in fact it is one of the very greatest of all our views, and by far the grandest valley view I have looked upon, for the rim view into Yosemite by comparison is not so grand as it is beautiful. The cañon revealed itself to the east as far as Mount Woodworth, its lofty diversified walls lifting precipitously from the heavy forests of the floor and sides, and, from our high viewpoint, yielding to still greater heights above. Enormous cliffs abutted, Yosemite-like, at intervals. South of us, directly across the cañon, rose the strenuous heights of the Monarch Divide, Mount Harrington towering 1000 feet higher above the valley floor than Clouds Rest above the Yosemite.

Down the slopes of the Monarch Divide, seemingly from its turreted summits, cascaded many frothing streams. Happy Gap, the Eagle Peaks,

Blue Cañon Falls, Silver Spur, the Gorge of Despair, Lost Cañon—these were some of the romantic and appropriate titles we found on the Geological Survey map. And, close at hand, opposite Mount Harrington and just across Crown Creek Cañon, rose mighty Tehipite. We looked down upon its rounded, glistening dome. The Tehipite Dome is a true Yosemite feature. It compares in height and prominence with El Capitan. In fact it stands higher above the valley floor and occupies a similar position at the valley's western gate. It is not so massive as El Capitan and, therefore, not so impressive; but it is superb. It is better compared with Half Dome, though again not so impressive. But it has its own august personality, as notably so as either of these world-famed rocks; and, if it stood in the Yosemite, would share with them the incomparable valley's highest honors.

From the floor the whole aspect of the valley changed. Looking up, Tehipite Dome, now outlined against the sky, and the neighboring abrupt castellated walls, towered more hugely than ever. We did not need the map to know that some of these heights exceeded Yosemite's. The skyline was fantastically carved into spires and domes, a counterpart in gigantic miniature of the Great Sierra of which it was the valley climax. The Yosemite measure of sublimity, perhaps, lacked, but in its place was a more rugged grandeur, a certain suggestion of vastness and power that I have not seen elsewhere. The impression was strengthened by the floor itself, which contains no suggestion whatever of Yosemite's exquisiteness. Instead, it offers rugged spaciousness. In place of Yosemite's peaceful woods and meadows, here were tangled giant-studded thickets and mountainous masses of enormous broken talus. Instead of the quiet, winding Merced, here was a surging, smashing, frothing, cascading, roaring torrent, several times its volume, which filled the valley with its turbulence.

Once step foot on the valley floor and all thought of comparison with Yosemite vanishes forever. This is a different thing altogether, but a thing in its own way no less superlative in its distinction. The keynote of the Tehipite Valley is wild exuberance. It thrills where Yosemite enervates. Yet its temperature is quite as mild.

The Kings contains more trout than any other stream I have fished. We found them in pools and riffles everywhere; no water was too white to get a rise. In the long greenish-white borders of fast rapids they floated continually into view. In five minutes watching I could count a dozen or more such appearances within a few feet of water. They ran from 8 to 14 inches. No doubt larger ones lay below. So I got great fun out of picking my particular trout and casting specially for him. Stop your fly's motion and the pursuing fish instantly stops, backs, swims round the lure in a tour of examination and disappears. Start it moving and he instantly reappears from the white depth where no doubt he has been cautiously watching. A pause and a swift start often tempted to a strike. These rainbows of the torrents are hard fighters. And

many of them, if ungently handled, availed of swift currents to thresh themselves free. You must fish a river to appreciate it. Standing on its edges, leaping from rock to rock, slipping thigh deep at times, wading recklessly to reach some pool or eddy of special promise, searching the rapids, peering under the alders, testing the pools; that's the way to make friends with a river. You study its moods and its ways as those of a mettlesome horse. And after a while its spirit seeps through and finds your soul. Its personality unveils. A sweet friendliness unites you, a sense of mutual understanding. There follows the completest detachment that I know. Years and the worries disappear. You and the river dream away the unnoted hours.

The approach to Granite Pass en route from the Tehipite Valley to the Kings River Cañon was nothing short of magnificent. We entered a superb cirque studded with lakelets. It was a noble setting. We could see the pass ahead of us on a fine snow-crowned bench. We ascended the bench and found ourselves, not in the pass, but in the entrance to another cirque, also lake-studded, a loftier, nobler cirque encircling the one below.

But surely we were there. Those inspiring snow-daubed heights whose sharply serrated edges cut sharply into the sky certainly marked the supreme summit. Our winding trail up sharp rocky ascents pointed straight to the shelf which must be our pass. An hour's toil would carry us over. The hour passed and the crossing of the shelf disclosed, not the glowing valley of the South Fork across the pass, but still a vaster, nobler cirque, sublime in Arctic glory!

How the vast glaciers that cut these titanic carvings must have swirled among these huge concentric walls, pouring over this shelf and that, piling together around these uplifting granite peaks, concentrating combined effort upon this unyielding mass and that, and, beaten back, pouring down the tortuous main channel with rendings and tearings unimaginable! Granite Pass is astonishing! We saw no less than four of these vast concentric cirques, through three of which we passed. And the Geological Survey map discloses a tributary basin to the east inclosing a group of large volcanic lakes and doubtless other vast cirque-like chambers. We took photographs, but knew them vain.

A long, dusty descent of Copper Creek, which McCormick correctly diagnosed as something fierce, brought us, near day's end, into the exquisite valley of the South Fork of the Kings River—the Kings River Cañon. Still another Yosemite!

It is not so easy to differentiate the two cañons of the Kings. They are similar and yet very different. Perhaps the difference lies chiefly in degree. Both lie east and west, with enormous rocky bluffs rising on either side of rivers of quite extraordinary beauty. Both present carved and castellated walls of exceptional boldness of design. Both are heavily and magnificently wooded, the forests reaching up sharp slopes on either side. Both possess to a marked degree the quality that lifts them above

the average of even the Sierra's glacial valleys. But the outlines here seem to be softer, the valley floor broader, the river less turbulent. If the keynote of the Tehipite Valley is wild exuberance, that of the Kings River Cañon is wild beauty. The one excites, the other lulls. The one shares with Yosemite the distinction of extraordinary outline, the other shares with Yosemite the distinction of extraordinary charm. The greater of these two cañons is destined to become famous under the name of its part, the Tehipite Valley; the lesser will have the undivided possession of the title, Kings Cañon. Tehipite is as distinctive and unusual a name as Yosemite. But the Middle Fork of the Kings is by far a greater stream from every point of view than the beautiful South Fork. Looking ahead, this cañon of the South Fork seems destined to the quicker and the greater development. It is broader, flatter, and more livable. It lends itself to hostelry, of which two already exist. It is more easily reached and already has some patronage. Moreover, from its name and position, it is the natural recipient of whatever publicity grows out of both. Tehipite has to build from the ground up.

There are few nobler spots than the junction of Copper Creek with the Kings. The Grand Sentinel is seldom surpassed. It fails of the personality of El Capitan, Half Dome, and Tehipite, but it only just fails. If they did not exist, it would become the most celebrated rock in the Sierra, at least. The view up the cañon from this spot has few equals. The view down the cañon is not often excelled. When the day of the Kings River Cañon dawns, it will dawn brilliantly. We loped and ambled and galloped down this gorgeous valley, filled to the brim with the joy of its broad forested flats and its soft invigorating air. The walls were glorious. Those in shadow were clothed in purple, streaked and blotched with yellows and many dark ochers. Large areas were frosted with grays of many shades, some on abutting cliffs shining like silver. The walls in sunlight showed interesting differences. The purples of the shaded side now became dark grays; the light grays, white. The yellows faded or acquired greenish tints. Here and there in broad sunlight appeared splotches of vivid green, probably stains of copper salts.

#### A TRIP TO CRATER LAKE ON SKIS

Crater Lake has always proved a powerful magnet in drawing me there at different seasons, and I have made my pilgrimages in various ways—by wagon, horseback, mule-team, auto and snow-shoes. I decided last March to attempt the trip on skis. . . .

Mr. Frank I. Jones and I left Klamath Falls March 12, 1917. It was a cold, clear day. We followed the shore of Upper Klamath Lake, Mt. Shasta and Mt. McLoughlin, better known as Mt. Pitt, appearing across the broad white expanse, for the lake was a solid sheet of snow-covered ice. . . .

At Chiloquin we bundled into a straw-filled sleigh; thirteen persons occupied the seats, with a big red rooster in a crate as rear guard and superstition chaser. . . . The snow had gradually deepened to over four feet as we neared Fort Klamath. . . . The outlook Tuesday morning was not promising. Over a foot of snow had fallen during the night. It was still snowing, and the heavy gray sky gave no assurance of any immediate change for the better. . . . From the Copeland place we continued our way on skis. Our packs averaged over thirty-five pounds each. . . . In addition to the provisions and personal effects, we had snow-shoes strapped on our packs for emergency use. . . . We pushed on through the soft snow, taking turns breaking trail through the pine forest. Another snowstorm about mid-afternoon shut out the sun and we looked for mile-posts or signs. Cheered by the sight of a blue enameled sign on a nearby pine, we turned aside to investigate. After poking the snow away I unearthed, or rather unsnowed, an ice-cream sign. For the first time it failed to awaken a responsive chord. About five o'clock a peaked snow mound, rising slightly above the level, announced our destination. A shovel thrust in the snow under the peak gave us the means to clear an entrance, and we soon ferreted below and entered the cabin of the Wildcat ranger station at the park entrance. . . .

Wednesday morning promised fair, sunshine and blue sky following a starlit night. We left our snow-shoes behind as useless luggage and started up the road, tall, high-crested yellow pines casting long shadows on a spotless floor of white. Soon we neared the rim of Anna Creek Cañon, frequently enticed to the very edge for the enchanting view of the stream, a green twisting ribbon far below. White slopes alternated with sheer walls of colored rock, columns and spires upthrusting here and there. . . . After eight hours of continuous plodding we reached the deep-set curve where a timber-cribbed opening under a deep floor of snow showed us Bridge Creek, the only bridge on the road. We found out later that this was five and three-quarter miles from Wild Cat. . . . It was after sunset when we reached Headquarters, where we were most cordially welcomed by H. E. Momyer, acting superintendent of the park. Fourteen feet of snow on the level necessitated going down a snow stairway to the front door. Mr. Momyer was monarch of all he surveyed, his only companions, bluejays, feathered camp robbers, and a pine marten, all so tame that a robber ate from his hand, and the marten overcame all caution in his eagerness to secure scraps of the fresh meat we had brought. His dark lithe body appeared like a shifting silhouette against the snow stairway. . . .

Thursday morning registered seven degrees above zero—clear, cold and snappy. . . . Friday afternoon we went up the low gap where the old road meandered to the rim, and came out on the lake at the base of Castle Crest. The sun was setting, giving a warm glow to the snow in the light, and cold gray to the snow in shadow. In the shadow below lay Wizard Island, a white cone; The Watchman, Glacier and Liao rose

on the western rim, kindled by the last rays, which in turn brought out Thielsen in sharp relief to the north, with blue sky above. The scene was sublime, one feature only missing—the marvelous blue of the lake. To our great surprise, the lake was frozen, fully three-quarters of its surface being ice-covered. We had been told that the lake never froze, and could not freeze, because of its phenomenal depth, constant temperature and surface-ruffling winds. . . . Shasta and Union peaks appeared to the south, from different points on the road leading westward along the rim towards the Watchman. The sun frequently burst through the white clouds to reward our patience. . . .

Sunday found a slight snow falling, giving a cushion for the skis and smoothing out irregularities. Reluctantly bidding our host farewell, we started down to Fort Klamath. Our skis needed no urging and no guiding. Down the broad road and around the broad curves on a gently descending grade they kept the deep grooves, so ardously made on the ascent, and nothing could ever be more wonderfully enchanting and exhilarating.

R. L. GLISAN

(Quoted from *Mazama*, December, 1917.)

HON. FRANKLIN K. LANE,  
*Secretary of the Interior, Washington, D. C.*

Seattle, Washington, January 18, 1918

My Dear Sir: As president of The Mountaineers, Incorporated, I am requested by that organization to communicate with you in regard to the proposal to pasture sheep in the Mount Rainier National Park.

I approach the subject with care for I know the ease with which the thought or the expression of "Obstructionist" may arise when anyone calls in question any suggestion that seems to aim at the increase of food. Our organization is patriotic and not obstructionist in any sense. We are proud of our service flag of twenty-eight stars and more to be added. When the call of digitalis came our members organized crews. They are still gathering large quantities. The women of the club are working with the Red Cross in producing sphagnum moss bandages. We have nearly emptied our treasury in buying Liberty Bonds.

If we thought the wonderful wild flowers of the Mount Rainier National Park were necessary to produce more wool and mutton for the use of the nation, we would endure the sacrifice in silence. We do not believe that such is the case, and we respectfully request that you exercise firmly your power to safeguard this great park from the destruction that is impending.

Everyone knows how completely these large bands of sheep destroy the flowers and verdure of the wild places overrun by them. Every year our members, visiting mountains where sheep grazing is permitted, encounter new barren places, made barren and desolate by heavy sheep grazing. Mount Rainier National Park should certainly be saved from that sort of devastation.



While the matter was up for discussion, several of our members declared that they would gladly pasture sheep on their city lawns if by so doing they could save the National Park. We believe that thousands of city folks would gladly make that kind of sacrifice to save the park.

As we see the threatening problem, you are the one officer in the nation who can solve it. You can surely save the Mount Rainier National Park and devise other ways of meeting the needs for wool and mutton.

In a spirit of patriotism, not only for the time of this crisis of war, but for all the years to come, we appeal to you to protect Mount Rainier National Park from the destruction now pressing towards it.

Yours faithfully,

EDMOND S. MEANY,

President of The Mountaineers, Incorporated

Wellcroft, Helensburgh, Scotland,

December 30, 1917

Dear Mr. Colby:

You may remember me as a guest of the Sierra Club in 1913, a brother of your "Mountain Goat." I want you to give my name and address to any of your young soldier friends (especially Sierrans) who intend to head for Scotland when they're taking leave from killing the enemy Boches. I'll be pleased to put them up here to the extent of two at a time. If twenty came at once, I'll hand out digging tools and they can construct a dugout in my back garden, and I'll see the Food Controller about extra rations.

Time was when I did a lot of drill in the "Territorials" on my feet. Now I'm called a "Volunteer" and do my drill on my stomach like a snake. They cheer me up by calling it machine-gun drill, and assuring me I shall be quite useful for home defence.

I shall get a small "Old Glory" ready for the coming of your friends.

Yours truly,

J. RENNIE

#### SODA SPRINGS PROPERTY, TUOLUMNE MEADOWS

To the Members of the Sierra Club:

Those members of the club who camped last summer on the Soda Springs property in the Tuolumne Meadows, which is now under the control of the club, appreciated more than ever the wonderful value of this property as a club asset. A more appropriate building than the Parsons Memorial Lodge could hardly be conceived, for with its stone walls and heavy log roof, it is entirely in harmony with the natural surroundings. While the lodge has been kept open during the summer and information given to the public, a more permanent headquarters should in time be established there so that our members can make it a central



camping place from which to take side trips, and where their property can be taken care of in their absence.

The necessity for making a new arrangement for financing this property will arise in the near future, as only about one-third of the ownership is now vested in the club itself. Many members have donated their shares to the club; a few shares have been purchased by special arrangement, and during the past year two were exchanged for life memberships. The latter plan appears the most feasible as far as the club itself is concerned, but we would like suggestions from members as to what shall be done in the future in the way of acquiring the remaining interests.

Very respectfully,

WM. E. COLBY,  
President

\* \*

#### THE GREATER SEQUOIA

##### *Recent Facts Point to Middle California as the Future Summer Home of Many Thousands of Campers Out*

Growing public interest in the plan of the Department of the Interior for the enlargement of the Sequoia National Park undoubtedly had much to do with last summer's enormous increase in the patronage of this fascinating reservation on the west slopes of the Sierra Nevada Mountains in central California. This increase amounted to more than seventy-two per cent of the attendance the year before; and last year's attendance, be it noted, was an increase of forty per cent over the figures of the exposition year preceding. That these two enormous increases cover the precise period since the plan for "the Greater Sequoia" was made public is at least significant.

Last summer's increase consisted largely of campers in and near the Giant Forest. Many of them remained for weeks, some all summer, much to the profit of the local business channels through which they purchased their supplies.

The Sequoia is fast becoming the greatest camping out locality in the country, and if the magnificent groves of the present Sequoia Park are supplemented by the immense scenic valleys it is proposed to add to the park, valleys now unknown to the public, there will be drawn to the park many thousands of campers yearly from far distant States.

\* \*

#### A SIERRA CLUB FUND FOR THE RELIEF OF STARVING CHILDREN

A growing feeling among many of our members that we as a club should undertake some form of service induced the San Francisco local walks committee to start a weekly collection on the Sunday walks as a nucleus for a war-relief fund. Contributions to the Holland Seaside Fund, which provides for the health rehabilitation of starving children

from Belgium and northern France, would seem to be a particularly appropriate work for our club members. To be of the greatest value our contributions should be made regularly, so that each month we could undertake the support of a certain number of children. For instance, fifty members paying five cents apiece each week would provide for the permanent care of two children. Though most of us can afford to give more than this, even the nickels and the pennies count.

The movement was started on the San Francisco local walk of January 13, and the response was very generous. Less than forty members were out, but, nevertheless, over six dollars were contributed. On January 20 we received over five dollars.

While it is particularly fitting that we who enjoy our weekly outings should pass along some of the benefits we derive from them to helpless, war-stricken children, we hope that other members will feel impelled to make small but frequent contributions to this fund. Mr. Fred R. Parker has consented to take charge of it, and all contributions should be sent to or left at the clubrooms in his name.

## NATIONAL PARK NOTES



### THE NATIONAL PARK SERVICE

The National Park Service was organized as the ninth bureau of the Department of the Interior immediately upon the approval of the deficiency appropriation act of April 17, 1917, which made funds available for its establishment. To quote from the act, the functions of the new service are to:

. . . promote and regulate the use of the Federal areas known as national parks, monuments and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The officers of the new service are: Director, Stephen T. Mather of Illinois; assistant director, Horace M. Albright of California; chief clerk, Frank W. Griffith of New York. Seventeen national parks and twenty-two national monuments are now under the jurisdiction of the National Park Service. In acreage the national parks total 6,254,568 acres; the national monuments, 91,824 acres.

Before quoting from the extensive and admirable "Report" for 1917 made to the Secretary of the Interior by Horace M. Albright, acting director, we would like to call the attention of our members to the scope and difficulty of the task that has confronted Mr. Albright this year. A serious and prolonged illness of Mr. Mather's threw the whole burden of organization and management upon Mr. Albright's shoulders, at a time, too, when every executive department and every branch of Government service was concentrated upon the war. In expressing our great happiness in Mr. Mather's recovery and return to the work into which he has put so much thought and energy, we wish also to congratulate him upon his assistant, and to hope that they may continue to work together in the park service through many administrations yet to come.

. . .

### REPORT OF THE DIRECTOR OF THE NATIONAL PARK SERVICE, 1917

#### TRAVEL

The total travel to the National Parks for the season was 487,368. . . . I shall not comment upon the national monument travel further than to state that it has materially increased. . . . The enormous increase in National Park patronage does not represent merely an increase in local travel; that is, travel from various park States and immediately adja-

cent territory. It represents an increase in both local travel and in patronage of tourists from distant States and foreign countries. The tourist traffic of the railroads possibly did not increase, but it is not probable that it decreased appreciably. Many of the railroads enjoyed an increased tourist patronage. Private automobile traffic increased tremendously in every park. . . .

Our travel reports also disclose an astounding increase in what we choose to call park-to-park travel. Hundreds of parties during the past summer visited more than one National Park; just how many it is impossible, of course, to ascertain, and scores visited groups of parks, such as the parks in the Rocky Mountains, the Pacific Coast parks, the northwestern parks, the southwestern members of the system, etc. . . .

Many pages might be written on the automobile routes to the various national parks and the accommodations that have been provided for the traveler along the way. . . . The efforts of the automobile clubs, highway associations, and other organizations to accurately and completely sign the roads, leading over mountain and plain, are worthy of extended comment, and the projects of the State highway commissions, involving extension and improvement of road systems, are closely related to the subject of motoring in the parks, and I regret sincerely that they can not be outlined here. Briefly, I may state that the highways in National Park States have been greatly improved during the past year. . . .

The National Parks Highway Association, with headquarters in Spokane, has this year assumed the leadership in this movement, and during the spring mapped and sign-posted a route from its terminus of last year in Mount Rainier National Park to Crater Lake, thus connecting Yellowstone, Glacier, Mount Rainier, and Crater Lake National Parks by what is known as the National Parks highway. In connection with the latest link added to this important system the beautiful Columbia River highway has been marked as a side trip, and I believe that all of the parties that have traveled over the National Parks highway this year have not overlooked the opportunity to see the wonderful scenery of the Columbia River gorge. This park-to-park highway should now be extended and marked in California, Arizona, Utah, New Mexico, Colorado, and Wyoming and the circuit completed. When the work of designation has been accomplished all interested in the development of travel to the National Parks can join hands in securing the improvement of the highway. In more than one sense this road will become a national asset. . . .

Conditions for motoring in the parks themselves during the 1917 season were most favorable. With one possible exception the park highway systems were in better condition than ever before. Every effort was made to safeguard travel on the roads. When automobile traffic was particularly heavy, extra traffic rangers were assigned to regulate the movement of cars, and all traffic on dangerous grades was carefully checked to eliminate all possibility of accident. Free automobile camp

service in several of the National Parks was extended during the summer, and it shall be our policy to make still further additions to and improvements in this service. These free camps are specially cleared areas, provided with water, and are located at convenient distances from supplies of fuel. Where shelter for cars is needed, buildings for this purpose are erected. Toilet facilities are provided, and the installation of grates for cooking purposes is proceeding rapidly. . . .

#### APPROPRIATIONS AND REVENUES

It is unquestionably the policy of Congress to appropriate an amount equal to the park revenues for park purposes in addition to funds for new construction work and general maintenance of improvements. Under ordinary circumstances, the park that is well developed will yield a large revenue, but, on the other hand, a park that is not developed can not possibly yield revenue of consequence. . . .

The remarkable increase in National Park travel has naturally increased park revenues materially. At this date it is too early to compile the complete tables of revenues for this season, but we are already aware of the fact that the parks will yield a larger revenue this year than ever before. And the revenues will grow larger each year, even though it may appear advisable later to revise some of the fee schedules downward, thus reducing auto taxes and rates for service in the parks affected. Each year several schedules require adjustment. I believe the time will soon come when Yellowstone, Yosemite, Mount Rainier, Sequoia, and General Grant National Parks, and probably one or two more members of the system will yield sufficient revenue to cover costs of administration and maintenance of improvements. An appropriation for extension of improvements and new construction work will be all that these parks will require. There probably never will be a time when all of the parks will not require appropriations over and above the revenues for one purpose or another, and it would not be proper and just to require these great national playgrounds to yield sufficient revenue to cover all the costs of operation, any more than it would be fair and reasonable to expect Rock Creek Park, in Washington, to pay all costs of its operation as a public recreational area. It seems that the National Parks and the Federal Government that controls them must jointly provide the necessary funds for their administration, protection, and improvement after the Federal Government has advanced their development to a point where they can yield revenue without placing a burden upon the tourist. . . . The appropriation for the current fiscal year for the park system is \$524,780; for the monuments, \$5000. The revenues for the 1918 fiscal year already reported are \$132,675.87. A comparison of the appropriations of the fiscal years 1917 and 1918 with those of preceding years will indicate clearly that Congress is heartily in sympathy with the development of tourist travel to the parks and is ready to cooperate by making both the parks and the monuments fully accessible. The appropriations that are now being made for many parks, however, are inadequate, and

no funds whatsoever were made available for the following National Parks recently established: Hawaii National Park in the Territory of Hawaii, Lassen Volcanic Park in California, Mount McKinley National Park in the Territory of Alaska. . . .

#### THE ROCKY MOUNTAIN NATIONAL PARK

The Rocky Mountain National Park enjoyed a larger tourist patronage during the 1917 season than any other National Park. The organic act creating this park contained the following inhibition on appropriations for its protection, improvement, and maintenance:

*Provided*, That no appropriation for the maintenance, supervision, or improvement of said park in excess of \$10,000 annually shall be made unless the same shall have first been expressly authorized by law.

On account of this provision no more than \$10,000 a year has been available, and as this amount has been just about sufficient to properly protect the park, it has been impossible to undertake any improvement project. The fact is, the appropriation of \$10,000 is barely sufficient for protective purposes now. The act of February 14, 1917, added to the park the region mentioned above as the Estes Park area, the Twin Sister Mountains, and other territory, in all 25,265 acres, thus increasing the area to be protected to 254,327 acres, and adding problems of traffic control, camp supervision, sanitation, and a multitude of other similar problems requiring an increase in the ranger force and the assumption of other financial obligations. There was no part of the appropriation available for improvement purposes this year, and yet the obligation remained to care for all visitors to the region. Our records show that prior to October 12, 117,186 visitors entered the park boundaries. . . .

#### YELLOWSTONE NATIONAL PARK

The reorganization of the concession system of the park was the most important accomplishment of the year. There had been numerous corporations and individuals engaged in furnishing transportation service, hotel and camp accommodations, photographic supplies, etc., and many of them had for years rendered indifferent service to the public. . . . There naturally followed constant friction among so many groups of concessioners. This was particularly true of the transportation companies. Many of the concessions in the park were operated in an uneconomical manner, and the cost of this inefficiency in management was borne by the traveling public, not in the form of exorbitant charges for service, but in unsatisfactory and insufficient service. . . .

The department finally concluded to grant a single transportation concession. The grounds upon which this decision were based were:

First. Because it would be uneconomical to permit the establishment of more than one transportation line on the Yellowstone roads with each touching the same point, just as it would be uneconomical to run more than one street-car line on a single street; also because each would re-

quire a separate management, a separate overhead expense account, and a separate operating supply base; likewise because there would necessarily be duplication in the establishment of garages, gasoline stations, etc.

Second. Because more than one line would be difficult to control by the park authorities, as questions of right of way on the roads would constantly arise for adjustment; and because there would be friction at railroad terminals, hotels, and other starting points in the handling of passengers.

Third. Because with more than one competing transportation system the tourist would be subjected to importunities and harassment at railroad terminals by rival solicitors, chauffeurs, and information clerks; and because the economic waste involved in the operation of the several systems would increase the cost of park tours.

Fourth. Because the investment required to establish a satisfactory transportation line in Yellowstone Park, with necessary operating bases, supply stations and garages, would be very large, and it would be doubtful if more than one line could be operated at a profit.

Having determined the principles that would guide the motorization of the transportation service, reorganization of all of the important concessions was necessary before the new transportation concession could be granted. This was finally accomplished by mutual agreement between the various transportation, permanent-camp, and hotel interests. A money consideration accomplished the elimination of one transportation company and the motor line operated from Cody, Wyoming. An adjustment of property interests and another cash consideration passing to a party that wished to withdraw from the camping business made possible the abandonment of the transportation features of the permanent camping business and the combination of the two important permanent camping companies. The third camping company was denied a renewal of its franchise.

When the reorganization reached the stage where there remained but one hotel company, one transportation company, and two camping companies that had disposed of their transportation privileges and combined their other property interests with the consent of the department, the policy of permitting the establishment of a single hotel enterprise, a single permanent camping business, and a single motor transportation line, as three Government-regulated public-utility monopolies, was adopted.

#### GLACIER NATIONAL PARK

The outstanding features of the Glacier National Park season are: First, the vast improvement in the road and trail system that has been effected under congressional appropriations; second, the increase in tourist patronage; third, the growth in popularity of the park as a summer resort, as evidenced by the return for another season of a large number of visitors of previous years and a substantial increase in the average length of time spent in the park by its visitors. . . .



The appropriation available for the last fiscal year was \$110,000; for the current fiscal year, \$115,000. With these funds it has been possible to improve the road systems on both sides of the park. The system on the east side has been largely rebuilt. The crossings of the river bottoms and lowlands have been filled to a sufficient depth to lift the road out of the mud and water in stormy weather. Bridges and culverts have been constructed, curves have been eliminated, grades realigned, and many miles of the system have received a graveled surface. . . .

The extensive trail system has also been improved and several miles of new trails have been constructed. The important new trail connecting Glacier Hotel on Lake McDonald with Granite Park Chalet was completed during the season. The construction of a new trail connecting Granite Park Chalet with Sun Camp, via Logan Pass, and a connecting trail to the Glacier Hotel, was begun and will be finished next summer. Several other important new trails will be completed this autumn. Many new foot trails leading from the various hotels and chalets to scenic points in their immediate vicinity were built and made available for use this year. The most important of these trails lead from the Granite Park Chalet to points where thrilling vistas of the finest mountain scenery may be obtained. One of them proceeds for a considerable distance (two and one-half miles to Gould Mountain) along the Garden Wall on the very crest of the Continental Divide, and from it one may step directly onto the Grinnell Glacier, one of the safest and most interesting glaciers of the park. It is proposed to continue this trail along the Garden Wall for several miles. . . .

#### MOUNT RAINIER NATIONAL PARK

Striking improvements in Mount Rainier Park are in evidence all around the mountain. First in importance is the fine new hotel in Paradise Valley. Next may be mentioned the picturesque new camp at the snout of the Nisqually Glacier. A new hotel has been built on the patented land at Longmire Springs, and this alienated tract has been cleaned up and improved in a manner that makes it impossible to recognize the old Longmire property. This hotel does not have as many facilities for accommodating guests as the National Park Inn across the road on Government land possesses, but it is a comfortable hostelry. . . .

The National Park Service has concentrated its improvement work entirely upon the road and trail system during the past year. Under an appropriation of \$75,000, the largest ever made by Congress for this park, the entire road system, including the Storbo road, has been improved. The road from the southwestern gateway to Nisqually Glacier has been widened, graded, and surfaced, several new bridges have been constructed, and new culverts installed. The road beyond the glacier to Narada Falls and Paradise Valley has been somewhat widened, curves have been eliminated, parapets have been constructed, and the road throughout its length graveled and made entirely safe for automobile traffic. . . . The trail system around the mountain has been much im-

proved during the year. Miscellaneous construction work, including the erection of a residence for the supervisor at the southwestern or Nisqually River gateway, was accomplished. . . .

#### CRATER LAKE NATIONAL PARK

Wild animals are becoming more numerous in the park, and it was observed this summer that a very few wild flowers are returning. There have been no wild flowers in the park since it was established, the sheep that ranged over this region before the creation of the park having utterly destroyed the wild-flower growth.

#### SEQUOIA AND GENERAL GRANT NATIONAL PARKS

The most important work accomplished in Sequoia National Park during the past year has been the assumption of control of the Giant Forest lands by the National Park Service and the preparation of these lands for the use of the traveling public, especially the camper and angler. . . . During the past season the park enjoyed an astonishing increase in patronage. The largest increase was in the number of people visiting the park in private automobiles. . . . The road which is just being extended to the Marble Fork River should be continued in the next year or two to the north boundary of the park, where connection may be made with the road which Tulare County is now building to connect the General Grant Park with the Sequoia Park. I inspected the county road during the past summer, and found that an excellent highway is being constructed between the two parks. The road traverses a scenic region, and the engineers who are building the highway are disturbing natural conditions as little as possible. When this county road and the Federal connection in Sequoia Park are completed, the circle route through the two National Parks will afford one of the most interesting scenic trips of the National Park system. Few park roads will enjoy a larger patronage than this new road because every party that goes into either General Grant or Sequoia Park will visit both before leaving this scenic region. I cannot too strongly recommend the continuance of the Government road work in order that the two National Parks may be connected by the automobile highway as soon as possible.

Summarizing travel to the Sequoia Park for the 1917 season, there were 18,510 visitors to the park as against 10,780 last year; 2334 automobiles this year as against 736 last. The revenues for the year were higher than ever before, \$10,326.60, as against \$5,169.86 for 1916.

Travel to the General Grant National Park this year is 17,390, as against 15,360 last year. Automobile travel was also heavier, 2158 cars having entered the park as against 1778 last year.

#### YOSEMITE NATIONAL PARK

The following Yosemite Park notes are quoted from the report of the supervisor, Mr. W. B. Lewis. If space permitted we should quote still

[Crater Lake National Park was created in 1902. Fifteen years of protection have not sufficed to bring back the flowers.—Editor's note.]

PLATE CCEVII.



SIERRA CLUB BULLETIN, VOL. 2.

A CORNER OF THE WOOD TECHNOLOGY LABORATORY, DIVISION OF FORESTRY,  
UNIVERSITY OF CALIFORNIA



REMAINS OF THE COAST & GEODETIC SURVEY'S OBSERVATORY  
On the summit of Mount Conness  
Photo by Walter L. Huber

PLATE CCXIX.

*Explorations and Surveys West of the 100th Meridian*

Name of Peak,	Mt. Conness
Triangulation Station No.	9
Approx. Altitude,	12500 feet
Party No.	2 California Section
Executive Officer,	Lt. M. M. Macomber
Topographical Asst.,	J. Calvert Spiller
Meteorological Asst.,	J. H. Morgan
En Route from	Bridgeport Cal. to the Yosemite Valley
Date:	September 25 <sup>th</sup> 1878
Corps of Engineers U. S. Army.	

Exposition 1878

## RECORD OF ASCENT OF MOUNT CONNESS

Left by Lieutenant M. M. Macomber, September 25, 1878. Removed from the mountain  
by Walter L. Huber, July 24, 1917; now deposited in the  
official records of the Sierra Club

more fully, as Mr. Lewis has made a very complete résumé of the work accomplished in this park and of its needs for the future. We call particular attention to his fearless stand upon the grazing question.

#### ROADS AND TRAILS

During the fiscal year 1917 the service maintained approximately 104 miles of road, as follows: Floor of Yosemite Valley, 22 miles; El Portal road, 8 miles; Big Oak Flat road, 13 miles; Wawona road, 4 miles; roads in Mariposa Grove of Big Trees, 10 miles; and Tioga road, 47 miles. As indicated in former reports, all of these roads, with the exception of a few miles on the floor of Yosemite Valley, are dirt roads which were originally built as wagon roads and which have been gradually improved until reasonably safe for automobile travel. All of these roads, however, are built on heavy grades and with sharp, dangerous curves, and the roadbeds themselves vary from 10 to 15 feet in width. The result is that automobiles, especially those of lighter construction, travel these roads only with considerable difficulty and with a considerable element of danger. That these conditions exist is unfortunate, and every effort should be made to take up the work of their improvement in order that automobilists may travel these roads with safety and with greater degree of ease and comfort.

It is a well-known fact that for the best interest of the park as a whole disproportionate publicity has been given to the waterfalls and other features of Yosemite Valley, with the result that travel to other portions of the park has been minimized. Although it is realized that Yosemite Valley itself will always be the most important feature of the park, both because of its accessibility and because of its many features of attraction for the recreationist, and as it is also realized that the bulk of moneys expended in development work in the park should be expended in and around Yosemite Valley where it will be of the most good to the most people, it is, however, important that a certain amount of development work be done in the outlying portions in order to attract visitors and thereby make known to the public something more of the opportunities for campers and outdoor people in those areas.

During the past year a trail was built from the White Cascades down the Tuolumne River to a point near the top of the first Water Wheel Fall. This has resulted in a large increase in the number of visitors to the Water Wheel Falls during the past year. In order, however, to completely accomplish the object for which the trail was started, namely, that of reaching all of the Water Wheel Falls, it is necessary that the trail be continued some two miles down the cañon to Return Creek, a tributary of the Tuolumne River. With this trail completed the Water Wheel Falls country would be easily accessible by horseback, and the trail would be extended to a point from where at some future time, should travel warrant it, it could be extended down the entire Tuolumne Cañon to Hetch Hetchy. This latter proposition is not one for consideration at this time, but should be given consideration in connection

with plans for the future development of the trail system. On July 1, 1917, funds were made available for the construction of a new trail, some eight miles in length, between the McClure Fork of the Merced River and Tuolumne Pass, by way of Babcock and Emeric lakes. The completion of this trail will shorten the distance between Merced Lake and the Tuolumne Soda Springs by some three or four miles, and will eliminate that portion of the present trail which passes over Vogelsang Pass and which, because of its high elevation, is late to open, dangerous, and extremely hard to maintain in a passable condition.

#### PATENTED LANDS

During the past year an important step has been taken toward acquisition by the Government of privately owned lands within the park. During the year exchanges of land and timber were effected with the Yosemite Lumber Co. by which the Government acquires title to nearly 7000 acres of land and 150 acres of timber only. Of this total amount, 790 acres include the timber and were acquired for purposes of protecting roads within the park. The remaining lands are either cut-over lands or lands upon which reservation of the timber has been made. In addition to this, an exchange was effected with the city and county of San Francisco whereby the Government acquires title to 360 acres of land in the vicinity of Hog Ranch. In each case, in return for such titles, the Government has granted timber rights on lands in localities where the loss of the timber will not in any way affect the scenic feature of the park. By these two exchanges the Government has acquired nearly 40 per cent of the privately owned lands in the park. Privately owned lands in the park still exist to the extent of about 11,000 acres, but in view of the fact that the Government has no accessible timber which could be disposed of without affecting the scenic features of the park, it will be impossible to acquire further private holdings by this method of exchange. The problem, therefore, of securing funds for the purchase of such lands is one that should be given consideration and attention. . . .

#### VISITORS

Visitors to the park during the period October 1, 1916, to September 30, 1917, reached a total of 34,510. The fact that the majority entered the park in private automobiles, and the further fact that the number of people so entering was far in excess of the number traveling by this method during the previous year, is evidence that it is this class of travel that must be given the bulk of consideration in future park development work, both on the part of the Government and the concessioners operating within the park. Roads and public parking places must be given special consideration by the service, and garage facilities and hotel and camp accommodations which appeal to this class of travel must be maintained by the concessioners. . . . The total number of automobile visitors utilizing the free public camps during the season of 1917 was 10,598. This compares with 4038 for the season of 1916. . . .

## GRAZING

Shortly after the declaration of war in April, 1917, with its accompanying propaganda on the conservation of food supplies, the question of opening the park to grazing was taken up on a large scale. All possible influence was brought to bear by the stockmen operating in the regions around the park. Their arguments in favor of such action by the service were based upon the alleged shortage of feed in the foothills and their alleged patriotic desire to do all possible in assisting in carrying out the policy of conservation of food supplies. Although there was no objection on the part of this office to opening certain areas of the park during the period of emergency, it was evident, however, that upon neither of these principles was based the real reason for the insistence on the part of the stockmen that the park be opened; but, rather, it was evident that advantage was taken of the emergency to open up the question with the hope of getting a permanent footing on the park lands, feeling that the acquisition of permits for this year would strengthen the claim for similar privileges in years to come.

When, in 1891, the park was created, grazing was already established throughout the area without Government regulation or authorization. It took more than 20 years of constant effort to eliminate it, and it was only by the rigorous application of force and more or less arbitrary ruling by the Army that the task was accomplished, and in the end the park lost several hundred square miles of territory through the readjustment of its boundaries. Even then the fight was continued on a small scale, with the result that in 1913 permission was given to certain persons to allow cattle to graze upon the park lands when being driven from one private holding to another, or from the park boundary to private holdings. This privilege was given contingent upon action by Congress on certain bills pending at that time, the object of which was the purchase by the Government of private holdings within the park. Although this legislation was never passed, these individuals have assumed these privileges to be sufficient authorization for the continuation of grazing over some 40,000 acres of park lands in the western portion of the park up until the present time. It is very evident that none other than these few individuals have benefited by the use of these lands. It might also be pertinent to state that in any arrangement the service may make permitting grazing on this portion of the park, these men and no one else will reap the benefit.

In view of the strong demands made the service saw fit to open certain portions of the park to grazing, and during the spring of 1917 permits were issued for the grazing of some 5000 head of cattle. The bulk of the area upon which grazing was allowed lies in the western and northwestern portion of the park, north and south of the Tuolumne River. In addition to this a small area in the southeastern portion of the park was opened to grazing.

When this question comes up another year, as it undoubtedly will, I



would suggest that grazing be allowed within the park on private lands only, and on these under fence. In case it should appear necessary to continue grazing of larger areas, because of the necessity of war conditions, I would suggest that the rate for this service be increased to not less than \$5 per head, in order that the Government may get its share of the benefit rather than to allow practically all to go to the few individuals holding permits, as is the case under the present arrangement, whereby the Government charges the sum of 50 cents per head per season. . . .

#### SUPERVISORS OF NATIONAL PARKS

For information regarding our National Parks write to  
*Casa Grande Ruin*, James P. Bates, Custodian, Florence, Ariz.  
*Crater Lake*, Alex. Sparrow, Crater Lake, Oregon.  
*Glacier*, George E. Goodwin, Acting Sup., Belton, Montana.  
*Hot Springs Reservation*, Dr. Wm. P. Parks, Sup., Hot Springs, Ark.  
*Mesa Verde*, Thomas Rickner, Sup., Mancos, Colo.  
*Mount Rainier*, D. L. Reaburn, Ashford, Wash.  
*Platt*, R. A. Sneed, Sup., Sulphur, Okla.  
*Rocky Mountain*, L. C. Way, Ranger in Charge, Estes Park, Colo.  
*Sequoia and General Grant*, Walter Fry, Sup., Three Rivers, Cal.  
*Sully's Hill*, Samuel A. M. Young, Acting Sup., Fort Totten, N. Dak.  
*Wind Cave*, Thomas W. Brazell, Sup., Wind Cave, via Hot Springs, S. Dak.  
*Yellowstone*, Chester A. Lindsley, Acting Sup., Yellowstone Park, Wyo.  
*Yosemite*, W. B. Lewis, Sup., Yosemite, Cal.

## FORESTRY NOTES

BY WALTER MULFORD



### WAR

War! Only these three letters are needed to spell what has chiefly occupied the minds and hearts of most of the forestry folk of California during the past field season. The stars and stripes have called thousands of men to cut timber from the French forests for the trenches, the railroads and the camps of the American expeditionary forces. The same stars and stripes have demanded the services of tens of thousands of men in the American forests to supply lumber for vehicles, aeroplanes, boats, cantonments, and boxes and crates in which to ship food, ammunition and army supplies. Our flag has required the services of scientific experts in determining the best woods to meet the demands raised by the war, and the best methods of treating these timbers. It has asked each remaining member of the greatly depleted forestry organizations to put his regular work on one shoulder and to balance the load on the other shoulder by assuming the duties of a brother who has been called away.

The result in California: the logging camps and sawmill crews are straining every nerve to make the forests contribute their just share of the nation's need for raw materials, but they are utterly unable to meet the demands made upon them; the Forest Service has been handicapped in handling a severe fire season because of the loss of men, and at the same time it has had to meet the demands made by increased stock grazing, more timber sales and much war work of other kinds; almost all the forestry students and part of the forestry faculty at the University of California have joined the colors.

War! It is unpleasant to intrude the all-pervading word into the journal of the Sierra Club, the club which helps people to get away from strife. But the fact is that the peaceful forests of California, almost on the opposite side of the world from where the struggling lines are drawn taut, are themselves feeling the shock to some extent. More timber is being cut, less help is at hand for controlling fires, more cattle and sheep are being grazed, less money and labor are available for building trails, bridges and telephones. War! May the vigorous Sequoia, with a thousand years of useful life yet to come, never again hear the word as a thing of reality!

### WAR WORK OF THE FOREST SERVICE

The California members of the United States Forest Service have taken their full share of war work. Coert Du Bois, district forester, and

many members of his staff are serving in various branches of the army. Last spring the Forest Service made a quick survey of the points in the California forests the destruction of which would benefit an enemy. Maps of these localities were prepared and furnished to the War Department. In the dangerous first weeks of the war the Forest Service cooperated in the protection of these properties, and no loss occurred. A military census of all members of the Forest Service was prepared, thus helping to place each man where he could be most useful. Soon after war was declared a survey made by the College of Agriculture of the University of California showed that the forage and feed crops of the State were only 65 per cent of the normal. Immediately the Forest Service engaged in far-reaching and painstaking work to make every acre of forage on the national forests fully available for the production of beef, mutton, leather and wool. The result was that on June 1 there were 23,000 more cattle and 71,000 more sheep on the national forest ranges of California than there had been in any previous year. The Forest Service took a large part in the draft registration under the selective draft act throughout the mountain sections of twenty-two counties. The Forest Service has also actively cooperated in many ways with the Committee on Resources and Food Supply of the State Council of Defence.

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#### A CONTRIBUTION TO RECREATION

During the summer of 1917 four hundred thousand people entered the Angeles National Forest for recreational purposes. Three cheers for the Angeles, and three more for the multitudes who have the good sense to use it! During the past year the Forest Service built sixty miles of new trail on the Angeles, and it expects to build fifty miles during the coming year. The Southern California Section of the Sierra Club contributed one hundred dollars toward the reconstruction of the old Buckhorn Trail, now renamed by the Forest Service as "Sierra Club Trail." There are now twelve hundred miles of trail within the forest, and it is expected that by the summer of 1918 there will be signboards at every trail intersection. Approximately one thousand summer residence permits are outstanding on the Angeles. Because of the existence within the forest of two of the largest game refuges in the State, deer are increasing rapidly.

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#### TAHOE-YOSEMITE TRAIL

During the 1917 field season the Forest Service completed the Tahoe-Yosemite trail from Upper Echo Lake to the lower end of Echo Lake. This brings the trail out to the Lincoln Highway. The work was done in cooperation with the Western States Gas and Electric Co., which furnished most of the labor. The trail built in 1917 is standard and of the

same general description as that built in 1916, which is described in the *SIERRA CLUB BULLETIN* of January, 1917.

#### NEW RECREATION MAPS

During the past year the Forest Service has issued new recreation maps of the Angeles, California, Cleveland, Inyo and Mono National Forests, and a highway map of California showing the National forests. These can be obtained free from the District Forester, U. S. Forest Service, 114 Sansome Street, San Francisco.

#### THE LUMBER INDUSTRY IN CALIFORNIA

"Probably the most important point of contact between the pine lumber industry in California and the Government in the present crisis is the manufacture of box shooks. California is so situated that many of its food products are marketed thousands of miles away from where they are produced. In most cases wooden boxes are essential for proper transportation. The National Food Administration is urging the most complete utilization of food products, and the lumber industry is being called upon to produce the box shooks. 1918 presents a problem that cannot be fully appreciated at the present time—the volume of crop production, demands upon the industry for men for the army, labor unrest, supply of cars for shipment, cost of raw materials and many other factors." (Comment by C. Stowell Smith.)

In spite of labor shortage, the cut of California timber was apparently greater in 1917 than in 1916. Taking seven mills in the pine region as an example, the season's cut in 1916 up to September 1 was 259 million board feet; in 1917, up to September 1, it was 270 million.

The Diamond Match Company has recently undertaken to cut its timber conservatively in order to keep its lands productive for future operations. Only trees above a certain diameter are cut, the smaller trees being left to grow to larger sizes; all merchantable timber is utilized well into the tops; the slashings are systematically burned after the first heavy rains and all dead snags on the logged lands are felled. A timber cruise of about 170,000 acres of timberland in Butte and Tehama counties, owned by this company, was completed last summer by the company's forest adviser, Frederick E. Olmsted.

Several lumbermen owning timber in the Sierra made strong efforts during the past summer to induce the Federal Government to make large appropriations for controlling the ravages of pine beetles.

#### CALIFORNIA WHITE AND SUGAR PINE MANUFACTURERS' ASSOCIATION

An important step in the development of the lumber industry of California was taken on July 1, 1917, when the scope of the California

White and Sugar Pine Manufacturers' Association was greatly enlarged and C. Stowell Smith was appointed secretary-manager. Mr. Smith was formerly in charge of the branch of forest products in the San Francisco office of the Forest Service. The Association, which was formed on May 15, 1916, now includes twenty-two pine lumber manufacturers.

There is great potential significance for the future of California forests in the formation of a strong lumbermen's organization such as this. Under unscrupulous management, it could be a powerful agent for unnecessary forest destruction. In good hands it can be one of the most effective of agents for perpetuating forests by proper use. Such an association increases the opportunity for the effective execution of a "get-together" policy between the lumbermen, the stockmen, the United States Forest Service, the United States National Park Service, the State Forester's office, the Sierra Club and all other agencies having vital interests in California's forests.

At present the association is concentrating most of its effort on one important point—the standardizing of the grades of soft pine lumber, which is a benefit to the consumer of lumber as well as to the producer. A book of rules describing the grades has been published and widely distributed to both manufacturers and consumers, and a traveling force of inspectors is employed.

The association is directly helping the government in the organization of forestry troops, having been authorized to select officers for the Twentieth Reserve Engineers (Forest) and to enlist privates for that regiment. Up to November 1, about 1000 men from the Pacific Coast had been selected, of which about 800 are from California. Orders have been issued to increase the regiment by about 6000 additional men.

#### THE DIVISION OF FORESTRY OF THE UNIVERSITY OF CALIFORNIA

In July, 1917, the Division of Forestry of the University of California moved into the newly completed Hilgard Hall, and thereby took its place among the well equipped forest schools of the country. The building houses seven divisions of the College of Agriculture. The forestry quarters include a classroom, a large general laboratory for all undergraduate courses, three special research laboratories for forest utilization and wood technology, three small special laboratories for advanced students in other branches of forestry, a large logging engineering laboratory, drafting room, blue print room, instrument room, herbarium room, lecture demonstration materials room, store room, club room and six offices.

The students of the Forestry Club of the University of California have issued seven numbers (May to November, 1917, inclusive) of a new magazine, "California Forestry." Its aim is "to unify the forest interests of the West." As American war plans developed, all the mem-

bers of the editorial and managerial staff joined the colors. An entirely new second staff was then chosen. Not only this entire second staff, but also, with a single exception, every other forestry student at Berkeley above the sophomore year joined the army. It was therefore necessary to suspend publication.

#### FOREST INDUSTRY COMMITTEE

An encouraging sign of the increasing desire of the various California forestry interests to pull together for the good of all is seen in the recent formation of a Forest Industry Committee. The members are: G. M. Homans, State Forester, chairman; Roy Headley, Acting District Forester, representing the United States Forest Service; R. E. Danaher, president of the R. E. Danaher Pine Co., representing the lumberman's viewpoint; C. Stowell Smith, secretary-manager of the California White and Sugar Pine Manufacturers' Association; and Woodbridge Metcalf, representing the Division of Forestry of the University of California. The committee was formed on October 13, 1917, at a forestry meeting at the new quarters of the Division of Forestry at Berkeley, which were being formally dedicated on that day. The committee holds regular monthly meetings. Originally planned to assist in meeting the fire situation in the forests, the grain fields and the grazing ranges, the scope of the activities was at once widened as indicated in the name "Forest Industry Committee."

#### FOREST FIRES

A forest fire bill again failed to become law at the 1917 session of the California legislature. In 1915 two forest fire bills were presented to the legislature. At a loss to choose between them, the two committees of the legislature to whom the bills were referred requested Henry S. Graves, chief forester of the United States Forest Service, to outline a bill for them. Mr. Graves was in California at the time and, although hard pressed by other duties, he devoted a week to study of the problem and the drafting of definite suggestions. The committees then drafted a bill following Mr. Graves' suggestions. The bill passed the legislature, but was vetoed by the governor. In 1917 the bill which had passed in 1915 was again introduced, with a few modifications, and passed the legislature with almost no discussion. It was again vetoed by the governor. In fire protection outside the national forests and national parks, California is sadly behind her sister States with equal interests at stake, and it is to be hoped that a fire bill fairly satisfactory to all parties can become law in 1919.

The summer of 1917 was the worst fire season in California since 1910. It is estimated that there were about 1500 fires reported on the California National Forests during the summer, of which about 150 were

severe. About 15,000 to 18,000 acres of timberland were burned over (this does not include brush land). The two largest fires were on the Santa Barbara National Forest in June, burning over 48,000 acres of brush land, and destroying human life, farm buildings, orchards and cattle. Lightning was responsible for about 500 of the fires.

In the Pacific Northwest during the 1917 season, 7688 forest fires were reported. In that region about \$1,825,000 were spent for fire prevention and fighting in 1917 by the lumbermen, the Government and other agents.

The California Forest Protective Association conducted a publicity campaign in April, 1917, against forest, field and brush fires.

#### TAMALPAIS FIRE ASSOCIATION

The Tamalpais Fire Association, which controlled matters connected with fire prevention on and about Mt. Tamalpais from 1914 to 1917, turned over its work to the recently formed Marin Municipal Water District in March, 1917.

#### FORESTRY IN THE COMMONWEALTH CLUB

The Commonwealth Club of California has recently organized a Committee on Forestry and Wild Life. Everyone who would like to work on this committee is requested to write to the secretary, Commonwealth Club, 153 Kearny Street, San Francisco.



## BOOK REVIEWS

Edited by MARION RANDALL PARSONS

"THE CRUISE OF THE CORWIN"\* In the summer of 1881 Mr. Muir accompanied his friend, Captain Calvin Hooper, on a long Arctic cruise in search of the *Jeannette* and Captain De Long's exploring party. Captain De Long had sailed into the Arctic in the summer of 1879, and grave fears were entertained for his safety. As a matter of fact, at the very time that the *Corwin* was beginning her search the *Jeannette* sank, crushed in the ice, a thousand miles to northwestward. Her captain and twenty of her men never returned. The *Corwin* was also searching for traces of two missing whaling ships. Coasting along the Siberian and Alaskan shores, making enquiry at all the Chukchi and Esquimo villages, gave Mr. Muir a wonderful opportunity to study the glaciation and plant life of the Arctic. The young Mr. Nelson, whose enthusiastic pursuit of birds and "other game"—such as the dead natives in the cemeteries and the "ivory spears, arrows, stone hammers . . . which formed the least ghastly of his spoils"—so amused Mr. Muir, is now the director of the U. S. Biological Survey.

The book is based upon a series of letters written during the cruise for the San Francisco "Bulletin." Certain passages from his journal containing material omitted from the letters have been included in chronological order to complete the record. Mr. Muir's valuable and interesting report on the "Glaciation of the Arctic and Subarctic regions visited during the cruise," and his "Botanical Notes," published in 1883 as a part of Treasury Document No. 429, likewise have been included in an appendix. The botanical report on the flora of Herald Island and Wrangell Land, says the editor, "still remains, after thirty-six years, the only one ever made on the vegetation of these remote Arctic regions." The editor's work throughout is admirable. An interesting introduction completes the story of the *Jeannette*, and gives a brief account of subsequent exploration in that region.

The narrative of the voyage dwells not alone on the features which were Mr. Muir's especial object of study, but on the characters and customs of the natives as well. The voyage was not without its danger. More than once they risked being crushed by the ice, narrowly escaping, indeed, the fate of the lost *Jeannette*. Mr. Muir was a member of the first party ever to land on the ice-bound shores of Wrangell Land. He also made the first ascent of Herald Island. "The midnight hour," he says, "I spent alone on the highest summit—one of the most impressive

\* *The Cruise of the Corwin*. Journal of the Arctic Expedition of 1881 in search of De Long and the *Jeannette*. By JOHN MUIR. Edited by WILLIAM FREDERIC BADE. Illustrated with photographs and sketches by MR. MUIR. Houghton Mifflin Company, Boston and New York. 1917. Pages, 272. Price, \$2.50.

hours of my life. The deepest silence seemed to press down on all the vast, immeasurable virgin landscape. The sun near the horizon reddened the edges of belted cloud-bars near the base of the sky, and the jagged ice-boulders crowded together over the frozen ocean stretching indefinitely northward . . . it was to the far north that I ever found myself turning, to where the ice met the sky." Written in the full flush of a new and absorbing experience, this book has a bright, spontaneous charm that, coupled with the almost universal appeal of Arctic exploration, is sure to make it a favorite.

M. R. P.

"TWO SUMMERS IN THE ICE WILDS OF EASTERN KARAKORAM" To stand where the foot of man has never trod, particularly at this period of the earth's history, is an inspiring and memorable experience. It does not happen as often as some writers would have us think. Many a lesser explorer, believing himself the first ever to penetrate a region, has come upon some such record of human occupation as the cairn of rocks found by Mrs. Workman high up on the Rose Glacier. But to Dr. Hunter Workman and Mrs. Bullock Workman the conquest of virgin peaks of almost incredible height and the exploration of great glaciers is already an old story, as readers of their earlier writings know. The present volume describes two expeditions during the summer of 1911 and 1912, including explorations of the Hushe and Kondus Glacier Systems of the Eastern Karakoram in Kashmir. The story of the first summer, told by Dr. Workman, confines itself largely to the scientific aspects of their discoveries. Mrs. Workman's narrative of the 1912 journey, on the other hand, has a more lively tone, richer in human incident. The story of months-long camping above 16,000 feet in altitude; of the first ascents of peaks 21,000 feet high; of caravan troubles with coolies, such as the pilfering of supplies and wanton extravagance with precious wood; of the two lives claimed by the glacier—all is told with vigor and a fine sense of values. Mrs. Workman was the originator and leader of the second expedition. Dr. Workman was "photographer and glacialist"; and with them also went Mr. Grant Peterkin, surveyor, and Sarjan Singh, a native plane-tableer. Three guides, Cyprian Savoye, Quazier Simeon, and Rey Adolf, and two porters, Rey Julian and Chenoz Cèsare, who later lost his life in a crevasse of the Bilaphond Glacier, were also a part of the expedition. The third part of the book is made up of discussions of the physiological features of the Bilaphond, Siachen (Rose) and Kaberi basins and glaciers by Dr. Workman. The illustrations throughout the book are very numerous and of exceptional beauty. The "geographical re-

\**Two Summers in the Ice Wilds of Eastern Karakoram. The Exploration of Nineteen Hundred Square Miles of Mountain and Glacier. By FANNY BULLOCK WORKMAN and WILLIAM HUNTER WORKMAN. With three maps and one hundred and forty-one illustrations by the authors. E. P. Dutton & Company, New York. Pages, 296. Price, \$8.00.*

sults of this expedition" are partially summed up by Mrs. Workman as follows: "About 850 square miles of mountain territory were mapped with plane table. Forty or more peaks were measured in different ways, many by triangulation, by Mr. Grant Peterkin. The Rose Glacier was first explored from end to end, and surveyed to its tongue in the Nubra Valley. The north and east Siachen sources . . . were discovered and first visited, and the relation of the Eastern Karakoram and Indus watershed to that of Chinese Turkestan at these points established. . . . A new group of high snow peaks was discovered beyond the east Rose wall on the Turkestan side. The King George V group was first seen and identified as such, and its three highest peaks triangulated. A new pass, 18,700 feet, was discovered and crossed and a first descent made from it to the head of the twenty-mile-long Kaberi Glacier, which was followed down its whole length to its tongue.

M. R. P.

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"VOYAGES ON THE YUKON" The "Call of the Wild" leaves an unpleasant taste. It raises the question: How strong a force is civilization? Must a new country be not only a place of hardship, but also one of crime and lawlessness? Fortunately our "story-book writers" have not the last word, and I agree with Hudson Stuck that Jack London has not left any "literary memorial" of the great stampede to Alaska, and that but one side of that period has been presented in his much read book. Hudson Stuck's book, "Voyages on the Yukon and its Tributaries," is more valuable to the reader who desires to know Alaska than a cartload of extravagant and highly-colored stories. It is a sane, well-balanced account of travel in the interior of Alaska. Climatic, topographic and sociological conditions as well as historical notes are covered in an interesting way. In contrast with the author's "Ten Thousand Miles with a Dog-sled," the book deals with summer travel, and this is synonymous with river travel. Part I is an account of the Yukon from the upper headwaters to St. Michael and the Bering Sea. Part II describes the Porcupine, the Chandalar, the Tanana, the Koyukuk, the Innoka and the Iditarod rivers and the Changeluk Slough. One must not expect a scientific and exhaustive treatise, for Stuck writes in a cursory and easy style and sees more with the eye of an ordinary observer than that of a scientist. For the general reader interested in travel, for the business man who wishes to understand the general conditions of life in and the future possibilities of Alaska, and for the sociologist who is interested in primitive conditions, I heartily recommend the book.

GEORGE J. YOUNG

\* *Voyages on the Yukon and its Tributaries*. By HUDSON STUCK. Charles Scribner's Sons. Price, \$4.50 net.

**"ON THE  
HEADWATERS  
OF PEACE RIVER"**\*

An unusually interesting narrative of a thousand mile canoe trip through one of the most remote and unexplored regions of British Columbia—"beyond the farthest camping ground and the last tin can." Leaving the railroad at Prince George, on the Fraser River, Mr. Haworth, with Joe Lavoie, his canoeman, for his sole companion, paddled as far as Giscome Portage, where their outfit was carried over the low divide to Arctic waters. At Summit Lake the long canoe journey really began—down the Crooked River to McLeod Lake, and down the Pack River to the Porcupine, whose junction with the Finlay forms the mighty Peace. As far as Fort Grahame on the Finlay, and for some miles beyond, the voyage was along traveled ways, as travel goes through the "immensity of that mighty mountain mass called British Columbia"—Indians, trappers, prospectors and Hudson's Bay Company men, occasionally a big game hunter or a party of scientists. The headwaters of the Finlay, however, are practically unexplored, and on some of its tributaries, notably the Quadacha, Mr. Haworth and Joe undertook long "backpack" trips, climbing mountains and noting great ranges and glaciers as yet unmapped. On the return journey they proceeded down the Peace in their canoe as far as Hudson's Hope, where they took a gasoline boat to Peace River Landing and the railroad. The narrative is told with spirit and many touches of human interest. The hunting experiences are plentiful enough to add zest, but do not usurp too much space. The whole book has the stamp of sincerity and shows a deep love of wilderness life, the more so, perhaps, that Mr. Haworth does not hesitate to record his moments of disillusionment when he longs for "hotels and ladies and electric lights." Many of us have known such moments. He leaves with us, however, a vivid impression of those memorable days when he "climbed beyond the barrier ranges and looked upon a world that was new."

M. R. P.

**"REPORT OF THE  
DIRECTOR OF  
THE NATIONAL  
PARK SERVICE"**†

In our National Park Notes we have quoted extensively from this admirable report, but it contains so much that is of interest to our members that it should be mentioned here also. The maps, showing railroad routes, automobile roads, trails, improvements and accommodations, make it an extremely valuable guidebook for travelers afoot, horseback, or motoring. A copy is on file in the Sierra Club rooms. We have not been informed whether the report can be obtained from the Superintendent of Public Documents.

M. R. P.

\* *On the Headwaters of Peace River. A Narrative of a Thousand Mile Canoe Trip.* By PAUL LELAND HAWORTH. Charles Scribner's Sons, New York. 1917. Price, \$4.00 net. Illustrated.

† *Report of the Director of the National Park Service to the Secretary of the Interior for the year ended June 30, 1917.* Government Printing Office, Washington, D. C. 1917.

"GREEN TRAILS AND UPLAND PASTURES"\* What a book for the shut-in, for the war-wearied or war-wounded mortal! Here is a real and living bit of New England spread out before our western eyes; a country commonplace and unpretentious to us westerners, used as we are to the great inland valleys, the endless expanses of desert and the sky-piercing mountains of our Pacific Coast. It takes a Walter Prichard Eaton to disclose the charm of the Berkshires, and a Walter King Stone to picture it for us. Ordinary hill pastures take on dainty beauties of form, color and vista under Eaton's loving gaze. Paddling a canoe down a little stream is fraught with all the wonders and mysteries of a trip up the Amazon. Even though only a few yards from a well-traveled road, you are utterly alone in a beautiful world, flower-fringed, tree-shaded. No gardener can equal a river, Eaton tells us. It understands the art of border, draping its banks with "wild grape-vines, a little feathery clematis and great masses of wild balsam, apple . . . The current is the gardener who keeps the edge in line, the beautiful sweeping line of the bend."

Rivers have their fascination, but so too do the stone walls on the New England country. These "artless hedgerows" in Eaton's glowing phrase "march in feathery beauty between a thousand fields, up hill and down, bright at their base with mulleins and milk-weed, with roses and goldenrod, harboring chipmunks within the old wall which is their spine, and white-throats flitting in their branches."

Flashes of lightsome humor liven Eaton's simple conversational style. Occasionally, however, its grace and humor is marred by self-consciousness. He pleads guilty to dropping into the fallacy of personifying nature, and discourses on his lapse at such length that we feel the tiresomeness of the discussion a greater sin than the original; for the chief commandment to an author is "Thou shalt not bore."

Only once does Eaton leave his beloved home country. Then he suddenly transports us to Glacier National Park. Here, as we would expect, his spirit expands and soars to meet the awe-inspiring beauty of the Rockies. Perhaps it was from this visit to the national parks of the West that Eaton received his inspiration as to the future for his beloved but neglected New England hills. Back of his love for them one feels all the time the question: What is to become of all this neglected country; these outworn farms, abandoned hamlets and villages? Country roads and canals are too distant to help open up this country again, the railroads have passed so far off that they are of no use. All the energetic and younger people have gone to the cities; it is not likely they will return. No, we can not look for a return of the vigor of pioneer days in these lonely hills; but why not convert this country into a playground for the people teeming in the cities of the Atlantic Coast? Why not make a great national forest out of the Berkshires? Many, I suppose,

\* *Green Trails and Upland Pastures*. By WALTER PRICHARD EATON. Doubleday, Page & Co. 1917. Price, \$1.60 net.

will shake their heads over the practical difficulties of such a scheme, but who knows? The dreams of today are often the deeds of tomorrow.

FLORENCE E. ATKINSON

"LIGHTS AT DAWN"\* One evening during the outing of 1912, at a Sierra Club campfire near the foot of Mount Whitney, a young Greek student stood up and described his experiences of the preceding night, spent at the summit of the loftiest mountain in the country. Those who heard Aristides Phoutrides that evening will remember his enthusiasm and his glowing words as he described the colors of the sunset. They will also recall that he told of singing "America," inspired by the grandeur of the scene before him. The experiences of that night on the mountain top made a deep impression on Phoutrides, for they stirred the two dominant emotions of his life—a passionate love of the harmonies of nature, and an ardent patriotism.

Anyone knowing Phoutrides would expect poems from him. His joy in the splendors of natural scenery is very real, impelling him to expression in song. His patriotism is of that fine type that looks for its inspiration not to any particular place or people, but to the spirit of freedom and liberty. Thus it is quite natural to find in his "Lights at Dawn" verses reflecting now the brightness of the California Sierra, now the soft color of the mountains of Greece, poems inspired by the triumph of liberty in the new Greece and the promise of America.

The poems cannot be rightly understood without some idea of the writer's experience. It is hard to believe that they were written by one who came to America only ten or twelve years ago, a stranger from an old-world country, with but a few words of English at his command. Born in the island of Icaria, near Samos, in the Ægean Sea, under Turkish sovereignty, Aristides Evangelus Phoutrides was Greek by race and spirit. His mother and sister did much for his early education before he attended the gymnasium and university at Athens. Later he studied in Cairo, and about 1906 came to America to continue his studies. After a year learning the English language and American ways, he entered Harvard College, and in 1911 was graduated "summa cum laude." He continued at the university, receiving the degree of Master of Arts and teaching in the department of the classics. In 1913 he was made a Travelling Fellow of Harvard University, going to Berlin and other German cities for research work and later to Italy and Greece. He returned to Cambridge after the outbreak of the European war and received the degree of Doctor of Philosophy in 1915. It was during the period of his graduate studies at Harvard that he spent a summer vacation in California and joined the Sierra Club outing in the Kern.

Last summer Phoutrides gave up his studies and his teaching and en-

\* *Lights at Dawn. Poems.* By ARISTIDES E. PHOUTRIDES. The Stratford Co., Boston, 1917. Price, \$1.25.

tered the officers' training camp at Plattsburg to prepare for whatever service he might be able to render in the world struggle for freedom and democracy.

F. P. F.

"YOUR NATIONAL PARKS"\* No such comprehensive work on national parks has yet been given to the public as this latest book by Mr. Mills. In it the traveler will find information concerning all of the national parks and monuments of the United States and Canada. The more important parks, such as Yellowstone and Yosemite, are described in detail—their topography and geological formation, their flowers, forests and wild animals, and interesting incidents in the history of their discovery and exploration as well. In addition the book contains valuable chapters on "Park Development and New Parks," "Wild Life in National Parks" and "National Parks, the School of Nature." In "The Spirit of the Forest," "In All Weathers," "The Trail," and in the preface Mr. Mills gives freer rein to the more imaginative style that we have come to regard as his own. An appendix by Laurence Schmeckebier containing definite information about routes and prices, and other statistical tables regarding national parks, adds greatly to the value of what is no doubt destined to become one of the most popular books on this subject.

M. R. P.

"THROUGH THE YEAR WITH THOREAU"† No more charming book has come to our attention this season than this sympathetic study by our fellow mountaineer, Herbert W. Gleason. What John Muir is to a Californian, Henry Thoreau is to a New Englander.

Mr. Gleason is an adopted Californian, it is true, but his deepest feeling, undoubtedly, is for the "architecture of the snow," the "beauty of wild apples," the "waving rye-fields" and "old, unfrequented roads" of Thoreau's country. An introduction, all too short, and interesting notes are contributed by Mr. Gleason, besides the very beautiful and artistic photographs that carry us through the seasons with Thoreau. The subjects of the quotations and pictures range from flowers and birds to cobweb drapery, early morning fogs and icicle "organ pipes." Long and patient study and infinite love must have gone into the making of such a book. Such a picture, for instance, as the "orientation of young pine shoots" is not easily come by.

M. R. P.

\* *Your National Parks*. A Guide to the National Parks. By ENOS A. MILLS. With detailed information for tourists by Laurence F. Schmeckebier, and with illustrations and maps. Houghton Mifflin Company, Boston and New York. 1917. Pages, 532. Price, \$2.50 net.

† *Through the Year with Thoreau*. Sketches of nature from the writings of Henry D. Thoreau with corresponding photographic illustrations. By HERBERT W. GLEASON. Houghton Mifflin Company, Boston and New York. 1917. Price, \$3.00 net.



"THE BIRD STUDY BOOK"\* Mr. Pearson has written a book of general interest. He presupposes no knowledge of birds or of zoology; nor does he attempt to identify species. His problem is to treat the bird branch of our population in such a way that we shall become conscious of their existence, their rights, their value to their human neighbors, and their sufferings; and he also describes the methods which are being employed to protect them from destruction.

After describing the life of birds at different seasons of the year, he gives a resumé of the work which has been done in Economic Ornithology, especially by the Biological Survey. When one realizes that injurious insects cause an annual loss of \$60,000,000 to the cotton crop in the United States, of \$53,000,000 to hay, \$2,000,000 to cereals, and 25 per cent to the crop of the market gardens, one understands why the protection of birds has become a national problem.

The Audubon Association, of which Mr. Pearson is secretary, is the Bird's Red Cross Society, working for the relief of the wild feathered population of our country. Largely through the efforts of the Audubon Society workers, all but eight of the States have adopted the Audubon law protecting non-game birds. The Federal Migratory Bird Law, beside protecting game birds, completed this campaign of the Audubon Society by protecting song and insect-eating birds at all times, thus extending the work into States which had not adopted the Audubon law. And in 1916, a treaty with Canada covering the provisions of the Migratory Bird Law was ratified by Congress. In addition to this protective legislation, the nation has set aside seventy bird reservations, and the Audubon Society protects about 500,000 breeding water birds and twenty heron colonies.

A campaign of education is being carried on systematically through the medium of the schools. Junior Audubon societies now number almost 600,000 members, and these members are being taught to know and to protect the birds.

AMELIA S. ALLEN

"MOUNT RAINIER"† Probably no other single mountain in the United States is so worthy of having a volume devoted to it as Mount Rainier. Not alone for its beauty does it stand supreme, but because around it centers so much of the early history of the Northwest. In this very interesting volume it is the historical side that Professor Meany has made paramount. In gathering together the personal narratives of the explorers and climbers he has given the book much greater value than in merely chronicling their attempts. Particularly vivid is the story of the "First Attempted Ascent," by Lieutenant A. V. Kautz.

\* *The Bird Study Book*. By T. GILBERT PEARSON, secretary National Association of Audubon Societies. Illustrated with pen and ink drawings by Will Simmons, and sixteen photographs. Doubleday, Page & Company, 1917. Price \$1.25 net.

† *Mount Rainier. A Record of Exploration*. Edited by EDMOND S. MEANY. The Macmillan Company, New York. 1916. Pages, 325. Price, \$2.50.

Chapters on the glaciers, the rocks, the flora and the place names and elevations add to the scientific value of a book that every lover of the mountain should own.

M. R. P.

"CANADA, THE SPELLBINDER"\*. In this book Lilian Whiting, best known for her books on Italy and a certain type of religious mysticism, enters a literary field in which she is less at home. The title is somewhat misleading, for one would expect to find a more comprehensive description of Canada's scenic resources than is here presented. But for the most part she writes only of the long strip of Canada which she has seen from the car windows of the Grand Trunk Railway System. "Railroad literature" is not to be condemned by its name, though usually it is of a somewhat hectic character. Miss Whiting has done her task well, and has put into the pages of her book much information about the urban populations and industrial aspects of Canada not ordinarily found in books of this character. Her literary interests come to expression in a chapter on "Canadian Poets and Poetry." There is an excellent folding map of Canada and numerous photographic illustrations, especially of the Mount Robson country. One who proposes to cross Canada on the Grand Trunk Railroad will find this book an entertaining guide.

W. F. B.

"GLACIER NATIONAL PARK"†. The publishers announce this book as the "first comprehensively descriptive guide to the recently opened Rocky Mountain wonderland." But one who intends to visit Glacier National Park must not let this appraisal prevent him from

taking along also the pamphlet entitled "General Information Regarding Glacier National Park," issued by the Department of the Interior in 1914, which is a gem of condensed facts. Equally indispensable remains Marius R. Campbell's "Origin of the Scenic Features of the Glacier National Park," published by the same department. The book we are now discussing appears under the joint authorship of Mathilde Edith Holtz and Katharine Isabel Bemis. One could wish that the style were a bit less exclamatory in places, but the reader will find in it entertaining information about the hotels, trails, lakes, glaciers, and wild flowers of the park, and even something about Blackfeet Indian legends and names. A topographic map of the park is conveniently printed on the inside of the front and back covers and the fly-leaves, and there are twenty excellent photographic illustrations. The book is to be recommended to any

\* *Canada, the Spellbinder*. By LILIAN WHITING. E. P. Dutton & Company, New York, 1917. With many illustrations in color and monotone. Price, \$2.50 net.

† *Glacier National Park, its Trails and Treasures*. By KATHARINE BEMIS and MATHILDE HOLTZ. George H. Doran Company, New York, 1917. 263 pages, octavo. Illustrated. Price, \$2.00 net.

one who is planning a trip to Glacier National Park. The preface quotes John Muir's advice, "Give a month at least to this precious reserve. The time will not be taken from your life. Instead of shortening, it will indefinitely lengthen it and make truly immortal."

W. F. B.

"CANOEING AND SAILING"\* This is a book for boys written by Warren H. Miller, editor of *Field and Stream*. It contains excellent directions for the building of boats, for the sailing of the batteau, sail dory, duckboat and skiff, and for the handling of catboats and knockabouts. Part II is devoted to canoeing and cruising, with a full discussion of canoe fittings. Part III discusses motor boat management and construction in the following chapters: Choosing Your Motor Boat, Motor Boat Fittings, Cabin and Interior Furnishings, Yacht Plumbing, All About Your Engine, The Galley of the Power Cruiser, Going Into Commission, Hauling Out for the Winter, and Building a Power Cruiser from Knockdown Frames. There is a long list of illustrations which helps out admirably the directions contained in the text. It is an excellent book to place in the hands of boys with a love of the water and a mechanical turn of mind. The construction does not call for expensive materials.

W. F. B.

"CAMPING AND WOODCRAFT"† The second volume of this manual of outdoors has for its aim instruction in the craft that enables one to be independent of equipment and to gain self reliance. We quote a few of the chapter headings to give some idea of the scope and usefulness of the book. "Getting Lost," "Pathfinding," "Nature's Guide Posts," "Trips Afoot," "Packs for Pedestrians," "Concentrated Foods," "Living Off the Country," "Accidents and Emergencies."

M. R. P.

"IN CANADA'S WONDERFUL NORTHLAND"‡ *In Canada's Wonderful Northland*, by W. Tees Curran and H. A. Calkins, is a book with a purpose which is best expressed in the last paragraph of the introduction by Mr. Curran himself, "It is hoped that some of the readers of the following chapters may catch the spirit of conquest that actuated their ancestors in raising the American continent to its position in the world today, and assist in opening up this great treasure house,

\**The Boy's Book of Canoeing and Sailing*. By WARREN H. MILLER. George H. Doran Company, New York, 1917. Illustrated. Price, \$1.25 net.

†*Camping and Woodcraft*. A Handbook for Vacation Campers and for Travelers in the Wilderness. By HORACE KEPHART. Vol. II, Woodcraft. Outing Publishing Company, New York. 1917. Price, \$1.50 net.

‡*In Canada's Wonderful Northland*. By W. TEES CURRAN and H. A. CALKINS. Price, \$2.50.

the heritage of the Canadian people." The book is a narrative of an expedition made in the summer and autumn of 1912, under the supervision of the authors, for the purpose of continuing investigations begun in 1907 of the natural resources of the territory of New Quebec. The party, consisting of twenty-one people, traveled by canoe and motorboat from Missinaibi by river and then along the coast of Hudson Bay to Clarke Island and return. "The season of 1912," as Mr. Curran says, "was conceded to be the worst in fifty years," hence much of the book is a description of difficulties thus occasioned.

The book is clearly written and gives a detailed description of the country and especially of the accommodations afforded to travelers. It would be valuable to anyone planning a similar expedition of exploration.

DAISYMAY HUBER

"THE AVIATOR  
AND THE  
WEATHER BUREAU"\*

This little book by our esteemed fellow member, Dr. Ford Ashman Carpenter, is a timely contribution to a very timely subject. There are four chapters under the following headings: The Signal Corps Aviation School at San Diego, Applied Meteorology for the Aviator, Weather Observations from an Airplane, Investigating the Upper Air. Dr. Carpenter went aloft himself in an airplane to become "personally acquainted with some of the conditions that confront aviators," and he tells his experiences and observations in an interesting manner. The account of the sounding balloons liberated at Avalon, California, for the investigation of the upper air is particularly interesting. One of them, carrying a meteorograph, went up 32,643 meters or twenty miles and a half. We commend this little book to all who are interested in the wonders of the air and the art of aviation.

W. F. B.

"THE BOYS' BOOK  
OF HUNTING  
AND FISHING"†

This is a practical book on out-of-door sports intended primarily for boys, but useful as well to any beginner. The author describes in detail the equipment necessary for, and the methods of handling the principal game fish of the Eastern streams. There follows the section on shooting, both with shotgun and rifle. A considerable portion of the book is devoted to camping methods, such as the selection of a camping place, erection of tents or shelters, camp cooking and travel. The book is principally adapted to camping in the eastern or northeastern woods, and not to the high mountain wilderness of the West.

J. N. LE C.

\* *The Aviator and the Weather Bureau*. By FORD A. CARPENTER, LL.D., Meteorologist. Published by the San Diego Chamber of Commerce, 1917. Illustrated with photographs and charts by the author and others.

† *The Boys' Book of Hunting and Fishing*. Practical camping-out, game-fishing and wing-shooting. By WARREN H. MILLER, editor of "Field and Stream." Geo. H. Doran Co., New York. 290 pages. Price, \$1.25.

**"WOODCRAFT FOR WOMEN"**\* A very complete description of the outfit and methods of camping useful to women. Two chapters are devoted to clothing and accessories; the remainder to packing, camp making and cooking. The book deals entirely with conditions present in the Eastern forest region.

J. N. LE C.

**"TOURING AFOOT"**† An excellent treatise of the methods of traveling through the wilderness where reliance must be placed entirely on what the traveler can carry on his back. The author first describes the general precautions to be taken in starting on such an expedition, and then takes up in order the important items, such as packs and packing, footwear, cruising, shelters, bedding, cooking outfit, and rations. The information is adaptable to all kinds of forest as well as mountain work. Those of the Sierra Club who anticipate packing, or as we call them "knapsack" trips, will do well to consult this book.

J. N. LE C.

**"TROUT LORE"**‡ A very technical account of the methods used to lure the wily trout from the stream to the frying-pan. The author speaks first of the different species and varieties of trout, in fact devotes a chapter to its natural history. He then takes up in detail the different methods of trout fishing and the different types of tackle to be used. The book is intended for those with some experience in trout fishing, not for the beginner.

J. N. LE C.

**"THE BOOK OF CAMPING"**|| The contents of this handy little book are: "Preparing to Go Camping," "How and Where to Camp," "Camp House-keeping," "How to Trap and Why," "Emergency Hints."

M. R. P.

\**Woodcraft for Women*. By KATHRENE G. PINKERTON. Outing Handbook No. 41. The Outing Publishing Co., New York. 174 pages. Price, 80 cents.

†*Touring Afoot*. By DR. C. P. FORDYCE. Outing Handbook No. 52. The Outing Publishing Co., New York. 166 pages. Price, 80 cents.

‡*Trout Lore*. By O. W. SMITH, angling editor of "Outdoor Life." With twenty-four illustrations from photographs by the author. Frederick A. Stokes Co. New York. 200 pages. Price, \$2.00.

||*The Book of Camping*. By A. HYALL VERRILL. Illustrated. Alfred A. Knoff, New York. 1917. Price, \$1.00 net.

The books above reviewed were furnished by the Bureau of the Associated Mountaineering Clubs of America.

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